COAL AGE

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The Vanishing Point

PROFIT can be taken from a business in such a degree that it affords to the operator a maximum benefit without upsetting price levels generally. A few of the larger coal companies have deliberately set their prices at a point that will render them a maximum net profit for the year with a minimum payment of Federal taxes. If all coal companies would follow the same practice the income of the Government would be seriously decreased and Congress forced to adopt other and better avenues of taxation than the present excess profit system.

Taking all the market will bear under present conditions nets the producer little but ill-will on the part of the consumer and piles up the storm of wrath to come, for beyond a certain point taxes take the bulk of the receipts. Figure it out for yourself and put a stop order on the price.

Educate the Public with Facts

THE National Coal Association has recently entered upon a program of publicity that contemplates the organization of speakers' bureaus in the local associations and widespread publicity by word of mouth and through the press. The new work of the national association along these lines is described as an effort to lay a ground work for the character of public declaration that will tell exactly what the problems of the industry are and in doing so form the basis for a better understanding on the part of the public. We are told that to do this "the public must be taken into the operator's confidence and be frankly and unhesitatingly told the operator's vieypoint." A very laudable program and one in the furtherance of which the coal trade press will gladly assist. But it is not sufficient to tell the public the viewpoint of the operator—tell the operator the viewpoint of the public if you would win public approval.

Accept first the fact that the public is now interested first in price—price of mine labor and of coal—and after that in profit, both of labor and operator. Get the facts and lay them before the public. The industry today, as an industry, is without the assembled information to properly convince the skeptical, and such data as are available are closely held.

If the producers of half the bituminous coal in the United States, the members of the national association, really desire to let the public in on the condition of their business, and we believe they have nothing to lose by so doing and nothing to hide, let them assemble the facts and give them to the public. We can do no better than quote a paragraph from the address of Dr. Garfield a year ago to the operators assembled in Chicago at the second annual meeting of the National Coal Association:

"Now, the public has much to learn. The public is waiting to be informed concerning many of these vital questions which are pressing upon you and upon the officers of the government. The public is ready to pay for what it ought to pay for. But the public demands the right to know whether what is being charged is just or not. You and I haven't any right to ask that they close their eyes and pay. Just as it is important for you to know the cost of production so it is important, if not imperative, that the public know what the cost of *consumption* is. In other words, gentlemen, they have a right to know in a general way, at any rate, what profits you are making, whether excessive or not."

Apply the Golden Rule

LABOR gets an increase, costs of production go up, profits figured on the percentage basis are added on, the cost of commodities and of living mount and labor demands another increase, in the ordinary everyday routine of today. Each, labor and producer, blames the other. Everyone is the innocent bystander now and the loudest protests and most radical statements are coming from the supposedly staunch element of our people—bankers, who have to pay thirty cents for a collar; lawyers and doctors, who are asked fifteen dollars for a pair of shoes.

If the buying public were but organized we would today witness a strike of far greater moment than any heretofore—a strike of buyers of the ordinary conveniences of life. Far-sighted leaders in business today point the way to start the line of prices downward without a wreck. Let every seller reduce his profit to the vanishing point or lower, taking a loss if necessary for a time. Thus the first step in the "Do unto others" policy would lead to the next, for our faith in the common honesty and fair mindedness of American labor is such that we believe that the coal operator once having proven good faith by lowering prices and profits, could ask and would receive concessions in wages from his employees.

Cottrell Director of Mines

MINING men will be pleased at the selection by the Secretary of the Interior of Dr. F. G. Cottrell as the new director of the Bureau of Mines. Although not a mining man by training or experience, Dr. Cottrell is a thoroughgoing scientist, a man of broad thought and very human sympathies.

Under his direction the bureau will find new inspiration for scientific research and the mining industries a new technical leader. The Bureau of Mines may be considered to have passed through the promotional stage and now, firmly established with the mining public and under the impetus of new leadership, to be entering upon a period of greater opportunity and usefulness.

Action Begins on the Indictments

NO SURPRISE was occasioned by the action of the defendants in the Indianapolis indictments when they last week filed bills in the various States in which they reside, asking that the Attorney General and various and sundry other legal lights of the Government be enjoined from putting them on trial before Judge Anderson.

The defendants are first of all interested in keeping out of Federal jails, and the indictment of last March was a trap for the unwary. It is understood to be the opinion of some counsel that should those indicted appear before Judge Anderson, and should a single overt act by any one of the accused be proven, all would be liable, so broad and hazy is the indictment.

Of course, what both operators and miners desire is to separate the charges and have each accused told what he is accused of having done, in order that he may proceed to defend himself. Perhaps the present proceeding will force the Government to come out in the open and most certainly will give us a new set of interpretations of the validity of the Lever Act.

Boiler Room as the Manager's After-Thought

IN the boiler rooms of too many of our coal mines the fact is clearly attested that the real business of the coal industry is not running a power plant but operating a coal mine. There is no need to ask if the man at the head of the whole operation is a mechanical engineer. It is evident he is not or he would not have stood so long by the locomotive boiler and hand firing and resisted so determinedly the pleading of his mechanical engineers for equipment better calculated to give results and save fuel. He would have known that the only kind of coal to use under an old-style boiler with the old-style grate is the expensive lump and nut fuel that was used when old-style boilers and grates had their day.

He should remember—none more readily—that in the early years of coal mining slack was not sold but shoveled to one side. Coal was picked up with forks and the slack was left in the mines, or if brought to the surfaces was piled outside in the tipple yard. No one could afford to use slack with the old type of grate, for it wouldn't raise steam and went through the grate openings to be wheeled to a dump, where to the despair and chagrin of the whole neighborhood it usually completed its combusiton and filled the air with the aroma of sulphur fumes.

It was only when automatic stokers were introduced that slack became salable. At first it barely paid freight, then it began to pay a part of the mining cost and finally in a few isolated cases in times of shortage it sold a little higher than lump because the large coal had to be crushed and appliances for that purpose were not available.

It may be said and thought that slack having become of value, Why not go on using lump or nut in the field? It has been done before when these sizes were expensive or exclusively salable; why not go on doing it now that the smaller sizes are marketable at a more reasonable figure? Why make a change now when the argument for change is a little weaker rather than a little stronger than before?

The answer is this: The difference in price between slack and larger sizes still warrants the greater use of slack; dirty coal can be used on the newer-style grates and cannot be burned on older types; good grates save coal while others only waste it. The argument is strong enough to eliminate the need for any hesitation. The only reason why such a change does not come quicker is because the mining man sees all his problems from the working face of his mines. He rarely looks in the boiler room unless a flue is leaking or a grate, a firedoor or an arch has fallen. Any boiler is good enough for him, for he doesn't understand the steam-making business.

More and more is coal sold on specifications. Quality is taking the place of quantity as the great desideratum. The only way to provide all the quality of which a coal is capable to cast out all the inferior material and to do this in the most liberal manner. Where the choice is between the market or the rock dump, care in selection must be exercised, but where the choice is between one's own boiler plant and the boiler plant of the customer the coal operator can afford to eliminate much coal that is merely dubious. At times he may even have to add some clean slack to the waste. Only a picking table and a mechanical stoker at the mine can give the essential letters of introduction for any coal that seeks admission to the best type of boiler installation in a distant city.

The time is coming when the boiler room will cease to be the manager's after-thought or his bad guess. The mining engineer, regular or consultant, will not have anything to do with its design or construction. The mechanical engineer will be left untramelled in its planning and his mining *confrère* will then cease to be troubled with the high cost of steam raising or with the difficulties arising from frequent boiler breakdowns.

Look Far Afield

NOTHING does more to develop industry than the disadvantages under which some portions of it labor. Out of the perplexities of certain regions come developments that more favored localities might never discover and initiate.

Thus we look to the Pacific Coast for progress in the pulverization of coal, its distribution and use and to Brazil to gain information as to the use of that product by railroads. To California we may direct our attention, for its low-grade fuel and the needs of the war have made experiments in pulverization profitable.

Briquetting may possibly make its largest progress away from the coal regions, notably in Ontario. The advances made will, however, soon react on the coal field, which, it is true, has long had quite a few briquetting plants. The Dakotas are going to show us something about carbonizing and briquetting low-grade coals, and Saskatchewan will soon indicate ways in which the work may be done. In those sections only lignites are now being, or are to be, beneficiated, but the work will undoubtedly add to the methods already tried and available in the treatment of low- and high-volatile bituminous coals.

Many are the problems bearing on operation in normal coal fields, but they find their first and most phenomenally successful solution where difficulties are greatest. Proved there, they gradually spread to mines that are more normal. The far-afield becomes close up as the year pass by.

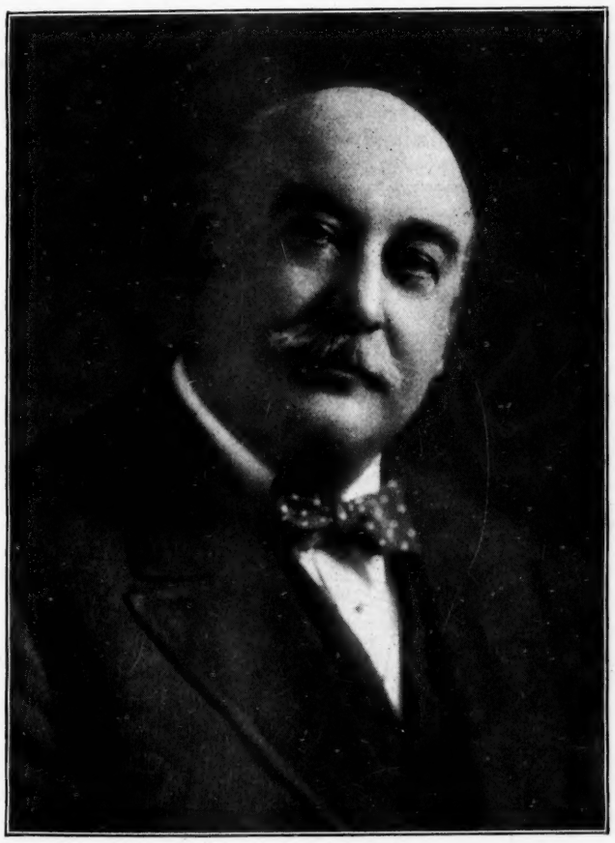
Representative Garland Is House Authority On Mining Affairs*

As Chairman of the Committee on Mines and Mining Pennsylvania Representative at Large Has Made a Close Study of Mineral Production—Was at One Time Vice-President of Federation of Labor

By Paul Wooton

WHEN Mahlon M. Garland, now Representative at large from Pennsylvania and chairman of the Committee on Mines and Mining of the House of Representatives, was a younger man an incident occurred at the collar of the shaft of a Pennsylvania coal mine which has since stood him in good stead in analyzing political and legislative propaganda. At that particular mine it was customary to keep the mules underground all the time unless it became necessary to shut down the mine for a considerable period. Such a shutdown having become necessary, the mules were brought to the surface after they had been underground many months. He saw them brought to the surface with their eyes carefully bandaged, and noted the safeguards taken to prevent their too sudden exposure to the light of day.

For weeks thereafter these mules revelled in a pasture. Then it came time to start working the mine again, and the mules were led up to the cage preparatory to being lowered for another long sojourn underground. They were keenly conscious of the fact that they were about to be returned to surroundings less to their liking, showing all the obstinate determination for which they are noted, and declined to be led or driven onto the cage. Every expedient tried was unsuccessful until the foreman conceived the idea of leading a blind mule onto the cage first. Despite the disposition they had previously shown, the mules, like sheep, followed their superannuated companion onto the cage, and soon were at their old task of providing traction in the darkness of the workings.



MAHLON M. GARLAND

This incident was regarded by Mr. Garland as typical of human conduct in many instances. Despite the good sense of individuals, they frequently defeat their own desires for betterment through following improper leadership. In his long experience in adjusting differences between employers and employees, and during his career as a politician and statesman, Mr. Garland has found frequent use for the story of the mules as an illustration of the consequences of blind leadership.

Through his life-long association with the coal industry Mr. Garland has followed closely developments in other lines of mineral production. He has given much attention to mining legislation and has just conducted a thorough investigation of the war-minerals situation. He is particularly interested in the relationships between capital and labor in the mining industry. Mr. Garland formerly worked as a laborer in iron and steel mills and has been prominently connected with the union labor movement. He at one time was the president of the Amalgamated Association of Iron, Steel and Tin Workers, and served two terms as vice-president of the American Federation of Labor.

As a labor leader who also enjoyed the confidence of employers he has frequently been called upon to advise labor and capital in industrial troubles. During the anthracite strike Mr. Garland took an important part, and was selected by John Mitchell as labor's member of the arbitration commission, which, however, did not function, as an agreement was reached without referring the matter to an arbitration board.

Mr. Garland was born in Pittsburgh in 1856. After twenty years' work as a laborer in the steel mills he embarked in politics, and served for many years as Collector of Customs at Pittsburgh. He has served as a member of the City Council of Pittsburgh and as a member of the School Board. He has been prominent also in the affairs of the Loyal Order of Moose.

As chairman of the House Committee on Mines and Mining, Mr. Garland is confronted with a variety of legislation which has an important bearing on mining affairs.

*Reprinted from an article in *Engineering and Mining Journal*, entitled "Government Officials Who Influence Mining."

Mine Layout Arranged for Large Tonnage and Minimum Handling Cost

While Not a Deep Seam, Care Has Been Taken to Leave Adequate Side Pillars on All Headings and a Large Area of Coal Round the Shafts, Both of Which Are To Be Used for Hoisting—A Natural Grade of 1.5 Per Cent Facilitates Caging

BY JAMES R. ELLIOTT
Pittsburgh, Pa.

ONE OF the most important points in the transportation system of any mine is the shaft bottom. No matter what the facilities for handling coal on the surface or how elaborate the arrangements for dispatching the trips within the mine may be, ease and efficiency of operation at these points go for naught if the coal moves slowly at the foot of the shaft. The loaded and empty cars as they enter and leave the cages must be handled quickly and effectually.

The method by which the coal is to be developed exerts a strong influence upon the bottom layout. Furthermore the lay of the bed must be considered, as well as the general dimensions of the tract to be mined. Sometimes much advantage may be taken of the natural dip of the coal. At the Mather Collieries,[1] located at Mather, near Jefferson, in Greene County, Pennsylvania, can be found a bottom layout that is highly effective and yet notable for the absence of machinery. This plant is served by a branch of the Chartiers Southern R.R. which runs along the south branch of Ten Mile Creek, and connects with the Monongahela division of the Pennsylvania R.R. at Millsboro, Pa.

The company owns about four thousand five hundred acres of the Pittsburgh bed of coal, which averages from 6 ft. to 6 ft. 9 in. in thickness throughout the tract. Overlying the coal is a drawslate about 1 ft. in thickness. The plant is situated in the southeast central part of the field and near the lowest elevation of the bed. Two concrete-lined shafts have been sunk to the coal, which lies at this point about 350 ft. below the surface. These shafts are 850 ft. apart. Both shafts eventually will be utilized for hoisting the coal, although at present the whole output is removed through the No. 1 shaft. Shaft No. 2 is employed for hoisting men and materials. The fan which normally exhausts air from the mine is situated at the No. 2 shaft. The direction of the air currents is shown in Fig. 2.

The map, which covers only a small portion of the property, was prepared as a projection for the current year's operation and shows in detail the method of mining. The landings for loads above each shaft are double tracked for a distance of 1,000 ft. and will ultimately be extended the same distance below for the empties. The grade is in favor of the loads, averaging 1.5 per cent and over, so that the handling of cars is entirely by gravity. This has been made possible by sinking the shaft square with the general dip of the bed, thus utilizing to a large degree a natural grade.

[1]The surface plant of this operation was fully described in Vol. 16, pp. 783-786.

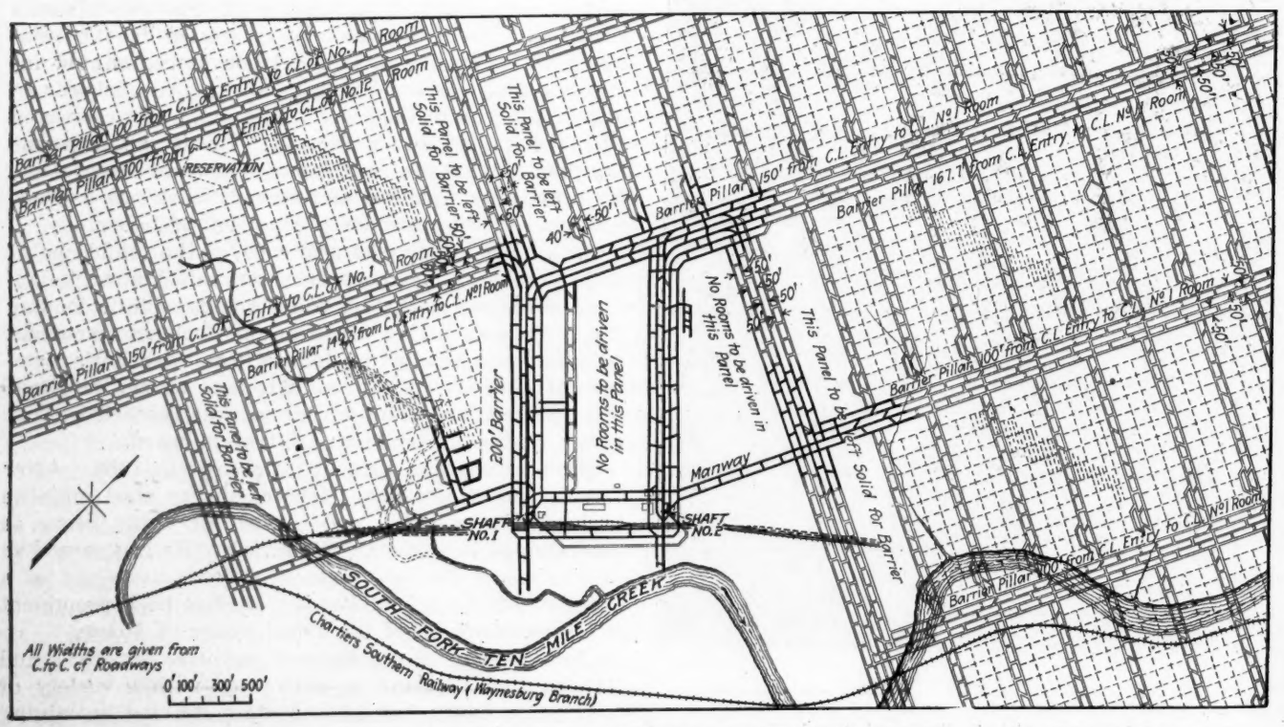

Barrier Pillar 100' from C.L. of Entry to C.L. of No. 1 Room
Barrier Pillar 150' from C.L. of Entry to C.L. of No. 1 Room
Barrier Pillar 167.7' from C.L. Entry to C.L. No. 1 Room
Barrier Pillar 100' from C.L. Entry to C.L. No. 1 Room
Barrier Pillar 150' from C.L. of Entry
Barrier Pillar 142.5' from C.L. Entry to C.L. No. 1 Room
RESERVATION
This Panel to be left Solid for Barrier
No Rooms to be driven in this Panel
200' Barrier
Manway
SHAFT NO. 1
SHAFT NO. 2
SOUTH FORK TEN MILE CREEK
Chartiers Southern Railway (Waynesburg Branch)
All Widths are given from C. to C. of Roadways
0' 100' 300' 500'

FIG. 1. PLAN OF PART OF THE MATHER MINE SHOWING METHOD OF PROVIDING FOR LARGE TONNAGE WITHOUT CONFLICT OF TRANSPORTATION UNITS

Self-dumping cages are employed. After leaving the cage the empty cars drop by gravity to a double-tracked landing below the shafts. Thence they may be made up into trips and hauled away by locomotives over empty tracks located on either side of the loaded-car landing and 40 ft. distant from it.

All main entries in the mine have been laid out on 50-ft. centers, one heading for the loads and one for the empties paralleling it. Manways have been provided and outside entries are used for the return air. It is the intention to bring the tonnage through shaft No. 1 up to 4,000 tons in eight hours, and in order to facilitate underground transportation it was deemed advisable to provide ample empty and load trackage.

The concentrated panel system of development has been adopted, the lengths between face entries being about 1,200 ft., with 300-ft. rooms. These chambers are driven on 100-ft. centers with breakthroughs every ninety feet. The shaded portion of the map indicates where it is intended to commence drawing the rib section.

The coal is cut with Jeffrey shortwall machines and the loaded cars are gathered at the main entries by storage-battery locomotives. From this point the trips are hauled to the shaft bottom by trolley locomotives. At the present time six 6-ton storage-battery machines and one 13-ton trolley locomotive are in use.

Sixty-pound rail is used on the landings; 40-lb. on all haulage entries and 20-lb. sections in the rooms.

Fig. 3 shows the shaft bottom and landings at the No. 1 shaft; the arrangement at the No. 2 shaft is an exact duplicate. The track gage is 44 in. while cars of 2½-ton capacity are used. This illustration is practically self-explanatory, showing in detail the type of construction around the bottom as well as the arrangement of the tracks better than any descriptive matter that could be written. The plant at Mather was designed by Baton & Elliott, of Pittsburgh, Pa., who also supervised its construction.

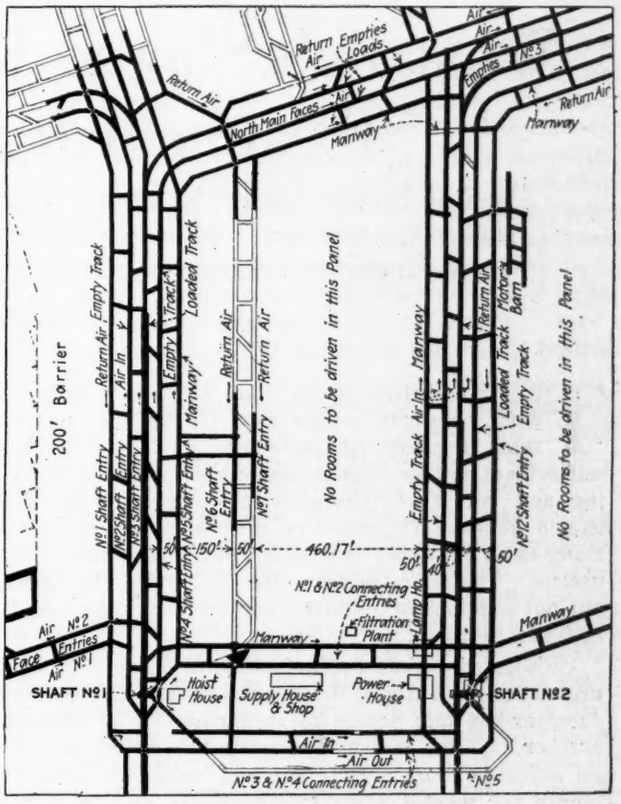


FIG. 2. LAYOUT OF SHAFT BOTTOM
With such large pillars and a seam only 350 ft. deep no movement of any kind should trouble the shafts

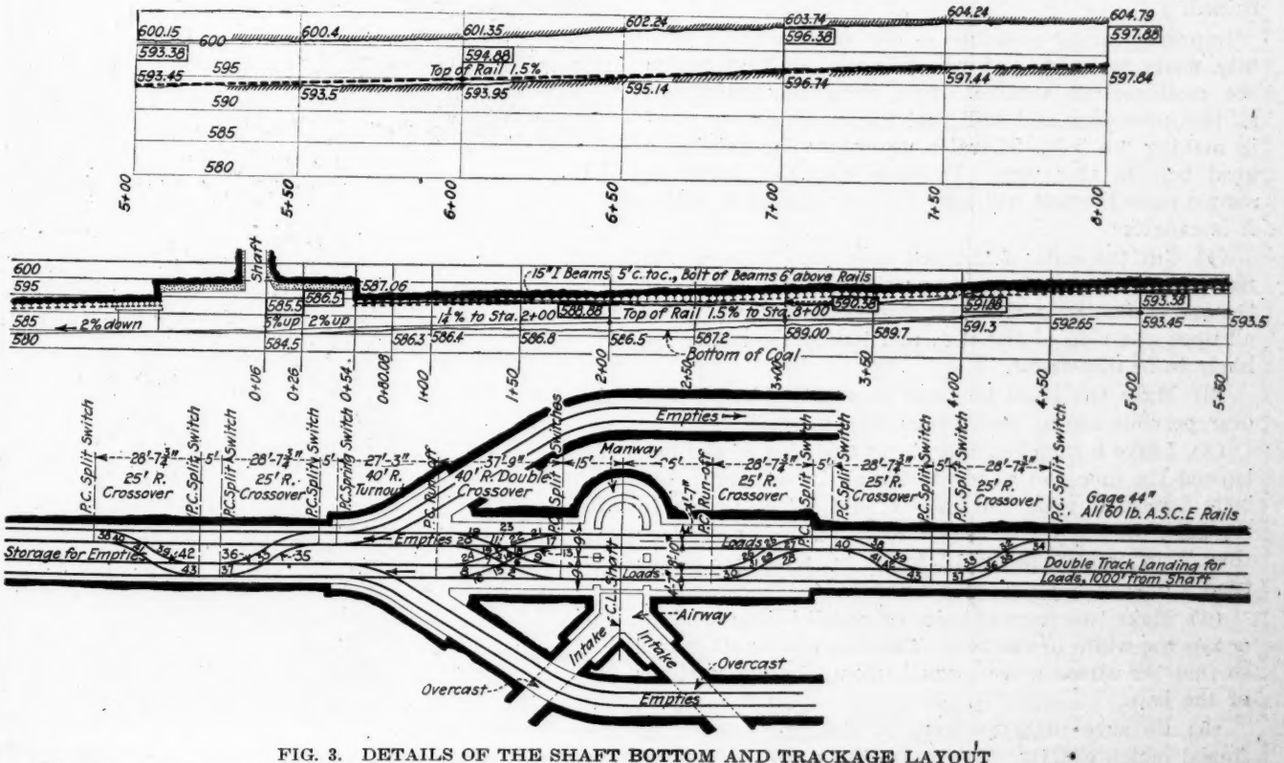


FIG. 3. DETAILS OF THE SHAFT BOTTOM AND TRACKAGE LAYOUT
Convenience and capacity characterizes this gravity-operated bottom layout. Steel timbering and concrete provide for the permanency of the installation. Few, if any, mine problems exceed in importance that of the layout of the landing of a shaft.

What Belt Should Be Selected and What Treatment It Should Receive

Belting Should Be Fitted to the Conditions Existing, Though a Lengthening of Pulley Centers, an Increase in Pulley Width and Other Changes May Lessen Wear—Improper Lacing May Cause an Otherwise Good and Suitable Belt to Fail

By E. K. Black
Akron, Ohio

TRANSMISSION belts, like delicate machinery, must be given proper care if the user expects them to render adequate service. This is such a self-evident truism that it seems hardly worth repeating and yet it is frequently overlooked. Belts that should be good for years of continued service are in many cases subjected to abuses which soon render them useless. The manufacturer often is blamed for having put out a defective product when in reality the belt itself was faultless.

Unjustified claims for adjustments on injured belts are made frequently by disgruntled users. Every manufacturer can cite dozens of such cases. The Diamond Rubber Co., for instance, recently was asked to make an adjustment on a belt that had been torn along its length for several yards at either end. The user was vehement in asserting that the belt was defective, but when an examination was made it was clearly shown that the only cause for injury was improper lacing. The lace holes had been punched haphazardly and with no regard to the necessity for providing that the stress would be across the width of the belt. The result was that when put in use the belt ripped and was practically ruined.

Improper lacing probably is the most common mistake made by users, and yet it is the one that causes the most serious trouble, often completely nullifying all the knowledge and skill that the manufacturer used in making the belt. There is no excuse for ruining a good belt in this way. By observing the following simple rules the belt will give the best service of which it is capable:

(1) Cut the ends of the belt absolutely square. Do not depend upon your eye or use an ordinary ruler. If the end is slanted in the least degree the pull will come all upon one side of the belt, and the consequences are likely to be disastrous.

(2) Make the holes as small as practicable. Whenever possible use an awl rather than a punch.

(3) Leave a sufficient margin at the edge of the belt beyond the holes, so as not to impair its strength. In belts 2 to 6 in. wide, the holes should not be nearer to the edge than ¼ in.; in belts 6 to 12 in. wide not closer than ⅝ in., and in belts 12 to 18 in. wide not closer than ¾ in.

(4) Make two rows of holes on parallel lines straight across the width of the belt. These should be staggered so that the stress will be equal upon different portions of the belt.

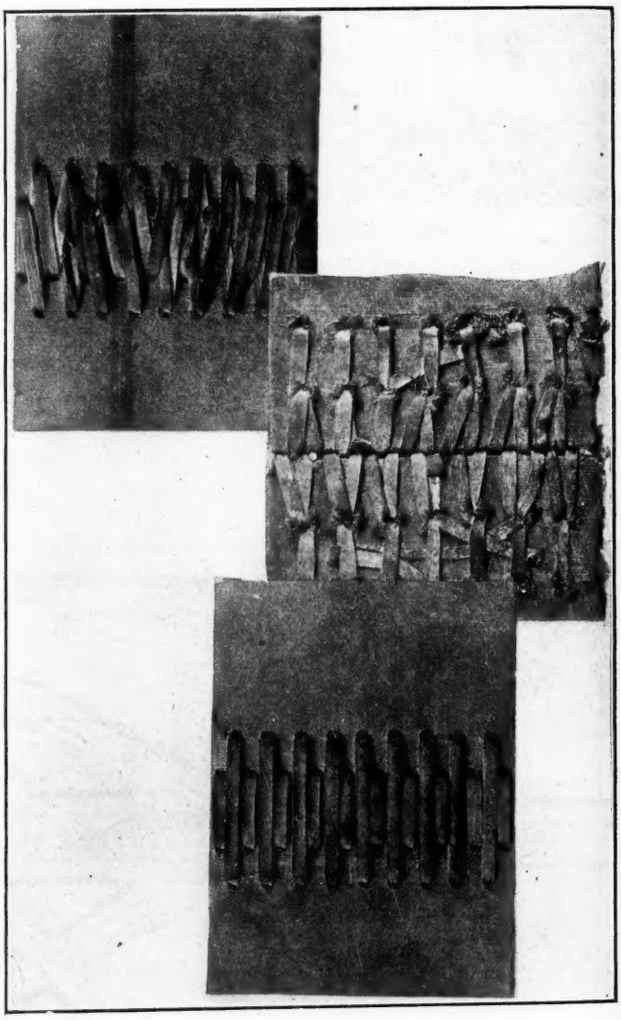
(5) Be sure that the holes in the two ends to be joined match exactly. Otherwise there will be a "jog" in the belt, and this is likely to result in tearing it lengthwise.

(6) Use flexible lacing, being careful to have it of a size proportionate to the size of the belt. A heavy lacing is likely to cause trouble.

(7) In lacing the belt make the pulley side as smooth as possible. Rough places should be avoided and ends should be pulled through away from the pulley.

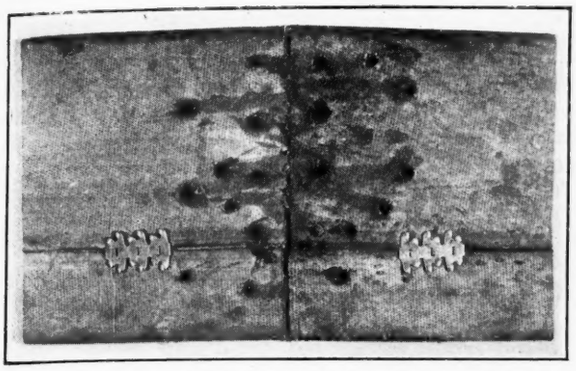
(8) In using metal fasteners select those that put the tension stress on the lengthwise strands of the belt. The crosswise strands are not as strong as those which run lengthwise.

Besides improper lacing, there are many other abuses that cut down the life of belts. Shafting that is out of



CORRECT AND INCORRECT METHODS OF LACING A BELT

The upper and lower figures show respectively the outside and pulley side of a properly laced belt. The middle figure shows a poorly laced belt—one that will sooner or later give trouble.



IMPROPER LACING CAUSED THIS BELT TO RIP

If any system or plan was followed in locating the lace holes, this is not apparent. This belt was ruined not worn out.

line may cause an undue strain upon the belt and make it run off the pulley. Oil may be allowed to drip upon it and ruin it. The belt may be applied with an initial tension so great as to produce an unnecessary strain.

Many complaints regarding unsatisfactory performance can be traced to the fact that the wrong belt was selected. No matter how good a belt is or how careful the treatment it may receive, it will fail to give satisfactory service if not adapted to the use to which it is put.

In deciding upon the proper belt for any particular installation eight factors must be considered: (1) distance between pulley centers; (2) diameter of the pulleys; (3) width of the pulleys; (4) use of idlers, cone pulleys, quarter turns, half turns, etc.; (5) speed; (6) horsepower to be transmitted; (7) nature of load, whether jerky or constant, and (8) conditions such as contact with moisture, oil or other bodies likely to cause deterioration in the material of the belt.

Over these factors the belt man usually has little or no control. His problem is to take conditions as he finds them, and apply a belt that will give the best service possible under the circumstances. Yet he may sometimes perform a real service by calling attention to a faulty arrangement when conditions are such that the fault may be corrected. Real economies may sometimes be effected by lengthening the distance between pulley centers, increasing the width of the pulley face, or by changing the arrangement of a vertical belt so as to give a certain degree of slant.

The factors which are under the belt man's control are these:

(1) The kind of belting to be used—whether rubber, leather, canvas, etc.; (2) the grade—whether cheap, medium or high grade, and (3) the weight of the belt—whether it shall be 4- or 6-ply, single or double.

In determining the kind, the merits of rubber belting should receive full consideration. This type is economical in first cost, extremely efficient in service and frequently outlasts other constructions. On the other hand, in places where constant contact with oil is unavoidable a rubber belt will not give good service. The constant use of shifters also injures a belt of this type.

In deciding upon the right grade of belt for a particular installation the points to be considered most carefully are the size of the pulleys, the presence of idlers or other unusual conditions, if any, and the speed. Small pulleys operated at high speed require a high quality of belt because internal wear takes place between the various plies of fabric, and even between the

TABLE FOR FINDING THE HORSEPOWER THAT A BELT WILL SAFELY TRANSMIT

Width, In.	Ply	Speed in Lineal Feet per Minute 200	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	5,500	6,000
4	4	1.45	3.64	7.27	10.9	14.5	18.2	21.8	25.4	29.0	32.7	36.4	40.0	43.6
	5	1.82	4.55	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.4	50.0	54.6
	6	2.18	5.45	10.9	16.4	21.8	27.3	32.8	38.2	43.6	49.0	54.5	60.0	65.5
5	4	1.82	4.55	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9	45.4	50.0	54.6
	5	2.27	5.68	11.4	17.1	22.8	28.4	34.1	39.8	45.5	51.1	56.8	62.5	68.2
	6	2.73	6.83	13.6	20.5	27.2	34.1	41.0	47.8	54.5	61.4	68.2	75.0	81.8
6	4	2.18	5.45	10.9	16.4	21.8	27.3	32.8	38.2	43.6	49.0	54.5	60.0	65.5
	5	2.73	6.83	13.6	20.5	27.2	34.1	41.0	47.8	54.5	61.4	68.2	75.0	81.8
	6	3.28	8.18	16.4	24.6	32.8	40.9	49.1	57.3	65.5	73.7	81.8	90.0	98.2
8	4	2.91	7.27	14.5	21.8	29.1	36.4	43.7	51.0	58.2	65.5	72.7	80.0	87.3
	5	3.64	9.1	18.2	27.3	36.4	45.5	54.6	63.6	72.7	81.9	91.0	100.0	109.2
	6	4.37	10.9	21.8	32.7	43.6	54.5	65.5	76.4	87.3	98.3	109.0	120.0	131.0
10	4	3.64	9.1	18.2	27.3	36.4	45.5	54.6	63.6	72.7	81.9	91.0	100.0	109.2
	5	4.55	11.4	22.7	34.2	45.5	56.9	68.3	79.5	91.0	102.2	114.0	125.0	136.4
	6	5.46	13.65	27.3	40.9	54.5	68.2	81.8	95.5	109.0	122.6	136.4	150.0	163.6
12	5	5.46	3.65	27.3	40.9	54.5	68.2	81.8	95.5	109.0	122.6	136.4	150.0	163.6
	6	6.55	16.3	32.7	49.1	65.5	81.7	98.2	114.4	130.9	147.0	163.5	180.0	196.0
14	5	6.36	15.9	31.8	47.7	63.6	79.5	95.5	111.4	127.2	143.0	159.0	175.0	191.0
	6	7.64	19.1	38.2	57.3	76.4	95.5	114.6	133.8	152.8	172.0	191.0	210.0	229.2
16	6	8.73	21.8	43.6	65.5	87.3	109.0	131.0	152.7	174.6	196.5	218.0	240.0	262.0
	8	11.63	29.1	58.2	87.3	116.3	145.3	174.6	203.5	232.6	262.0	290.6	320.0	349.2
18	6	9.82	24.5	49.1	73.7	98.2	122.8	147.4	171.8	196.4	221.0	245.6	270.0	294.8
	8	13.09	32.7	65.4	98.3	130.9	163.4	196.6	229.0	261.8	294.0	326.8	370.0	393.2
20	6	10.9	27.3	54.5	81.8	109.0	136.5	163.6	191.0	218.0	245.6	273.0	300.0	327.2
	8	14.5	36.4	72.7	109.0	145.5	181.9	218.0	254.5	291.0	327.7	363.8	400.0	436.0
24	6	13.09	32.7	65.4	98.3	130.9	163.4	196.6	229.0	261.8	294.0	326.8	370.0	393.2
	8	17.4	43.6	87.2	130.8	174.4	218.0	261.6	305.0	348.8	392.0	436.0	480.0	523.2
30	6	16.3	40.8	81.6	122.4	163.2	204.3	245.0	286.0	326.4	368.0	408.6	450.0	490.0
	8	21.8	54.6	109.0	163.8	218.0	272.8	327.6	382.0	436.0	492.0	545.6	600.0	655.0
30	10	27.3	68.2	138.4	204.6	273.0	341.0	409.2	477.4	546.0	614.0	682.0	750.0	818.4
36	8	26.2	65.5	131.0	196.5	262.0	327.5	393.0	458.0	524.0	589.0	655.0	720.0	786.0
	10	32.7	81.8	163.6	245.4	327.2	409.0	490.8	573.0	654.4	737.0	818.0	900.0	981.6
42	8	30.5	76.4	152.7	229.2	305.4	382.0	458.4	535.0	610.8	687.0	764.0	840.0	916.8
	10	38.2	95.5	190.9	286.5	382.0	478.0	573.0	668.0	764.0	860.0	956.0	1050.0	1146.0
48	8	34.9	87.3	174.5	261.9	349.0	437.0	523.8	612.0	698.0	786.0	874.0	960.0	1,047.6
	10	43.6	109.0	218.0	327.0	436.0	546.0	654.0	764.0	872.0	982.0	1,092.0	1,200.0	1,308.0

fibers in each ply, each time the belt rounds the pulleys. A high-grade "rubber friction" (an elastic rubber film between fibers) is the best possibble protection against this internal wear, because it protects each fiber with an elastic coating that remains uninjured and which indeed retains its life and elasticity longer when in use than when lying idle.

In this connection it should never be forgotten that the value of a particular rubber friction cannot be determined merely by the test showing "pounds pull." If the plies were fastened together with glue, this test would still show a high-grade belt. Everyone knows, however, that such a belt could not give service. The most valuable property of rubber friction is that intangible quality called "life." There is no known test for this but length of service.

In specifying the proper ply of rubber belt for a given installation the determining factors are the size of the pulleys, width of the belt, speed and horsepower to be delivered. The belt itself should be at least 1 in. less in width than the face of the pulley. With this in mind, the proper ply can be determined by consulting the accompanying table of horsepower and plies. To illustrate, assume a pulley whose face is 13 in. wide, operated at a speed of 4,000 ft. per minute, with a maximum load of 100 hp. It will be found by referring to the table that a 12 in. 5-ply belt operating at 4,000 ft. per minute will transmit 109 hp. Specification will be made accordingly. In specifying the ply it must also be remembered that the greatest number of plies to be used on a 12-in. pulley is four, on a 18-in pulley five, on a 30-in. pulley six, on a 40-in. pulley seven and on a 48-in. pulley eight.

Carbonization of Lignite To Be Tried in North Dakota

NEW SALEM, North Dakota, has been selected by the Bureau of Mines as the place at which it will conduct its experiments in the carbonization of lignite. Congress has appropriated $100,000 for this work and an additional $200,000 is to be furnished by private interests who are co-operating in the work.

Immediately following the appropriation of the funds O. P. Hood, the chief mechanical engineer of the bureau, was assigned to the task of finding a suitable location for the conduct of the experiments. Extensive lignite deposits of a promising character exist in North Dakota and in Texas. Early investigations led to the conclusion that it would be advisable to locate the plant in Texas, because at that time there were a number of places in close proximity to the lignite deposits where there would be a ready sale for the gas.

After a site for the plant practically had been agreed upon extensive oil fields were developed in the same general region, which did much to solve, temporarily at least, the Texas fuel problem, and there was no hope of competing with the low-priced natural gas which suddenly became available. With this change in the situation North Dakota became the more promising location for the work, but it has been necessary to devote considerable time to making arrangements for the co-operative work. A contract has now been signed by the Bureau of Mines with John B. Adams and Fred Bremier, who will form a subsidiary to the Consolidated Lignite Collieries Co. The site on which the plant will be established is owned by this corporation.

It is the idea of the Bureau of Mines that as a result of the work which will be done the plant will be made commercially successful, and that it will continue in operation after the investigational fund has been expended. It is expected that publication of the results of the experiments will stimulate duplication of such plant throughout lignite areas.

The Bureau of Mines has assumed the responsibility of planning, erecting and operating the plant which is to carbonize lignite and will also undertake the same obligation with regard to the briquetting plant. The bureau also is to maintain active general supervision over the construction and operation of the entire activity during the period of the investigation. The co-operating company has agreed to furnish the site; to provide $200,000 for construction and installation of equipment; to install certain specified portions of the equipment; to furnish all lignite coal and other raw materials; to conduct the business operations of the enterprise, including the selling of the products; to furnish all labor and keep all necessary books and operating records. The equipment of the plant is to include special machinery which has been developed by the work of S. M. Darling, who will be in immediate charge of the experimental plant.

Immense quantities of lignite are available in Texas, North Dakota and other Western states. This fuel is fully equal to much of the fuel on which European countries depend for industrial development, but this country has such quantities of higher-grade fuel that the shortcomings of lignite have confined its use to relatively small quantities in narrow fields.

The fact that the fuel disintegrates on drying or when placed on a hot fire makes it less desirable than good bituminous coal. There are ways, however, of benefiting this fuel which looks very promising. By heating the lignite sufficiently to drive off the moisture and a part of the volatile matter, a char is obtained which, in heating value and analysis, closely approximates anthracite coal. Its physical condition is, however, comparable to the finer sizes of buckwheat anthracite, which are not used as domestic fuel but can, however, be briquetted and made into a satisfactory household fuel.

In driving off the volatile matter, numerous byproducts are made available which may be made into salable products. There have been no commercial installations combining carbonizing, briquetting, and recovery of byproducts in one plant, although considerable experimental work has been done in each of these fields and some attempts have been made to combine them.

It is believed that under present conditions a successful plant can be assembled. The government fund will be used in providing those parts of the plant that are unusual and special, and in making a thorough investigation of the process and of the quantities produced so that a report for public use will be available for those desiring to enter this field.

In our issue of April 22, p. 790, in an article entitled "Self-Closing Gates" credit was given to the blacksmith at the Silver Creek Colliery for inventing the device described. He is indeed to be credited with the construction of the Silver Creek turnstile, but Cornelius Walters, outside foreman at Eagle Hill Colliery, actually devised the mechanism and with co-operation of the blacksmith at that mine worked out his ideas, erecting at that operation the first gate of that type.

Cutting Power Costs at an Anthracite Mine By Utilizing Exhaust Steam

For Years Power Has Been Purchased and Steam from Several Engines Exhausted Into the Atmosphere — Utilization of This Exhaust in Low-Pressure Turbines Will Result in Large Savings — Other Important Incidental Economies

BY DEVER C. ASHMEAD
Tarrytown, N. Y.

FOR a number of years the Price-Pancoast Coal Co., of Scranton, Pa., has been purchasing its electric power, although it has been necessary to generate steam to the amount of 2,200 b.hp. to operate the hoisting, breaker and various other engines at the mines. For many years these engines have been exhausting into the air and consequently wasting an enormous amount of power that might have been utilized.

Moreover, the money spent in the past for electric current probably would have paid many times over for the construction of the contemplated new power plant. Realizing this tremendous waste, the coal company thoroughly investigated the subject of using its waste heat for the production of useful energy. As a result of this investigation it was decided to install exhaust-steam turbines for the generation of electric current and to remodel the boiler plant simultaneously.

The old boiler installation consisted of six 300-hp. Stirling and two locomotive boilers. The short stacks seen in Fig. 2 are those from the boilers of this last-named type. The plant will not be enlarged; in fact when the improvements are completed it will be smaller than before, for the two locomotive boilers will be discarded and the space now occupied by them will be used for the blower fans and the boiler-feed pumps.

Dutch ovens have been added to the boilers and Coxe stokers have been installed. An overhead coal bunker having a capacity of 900 tons has been constructed. As it was necessary to carry on construction work while the plant was being operated, it was possible to install

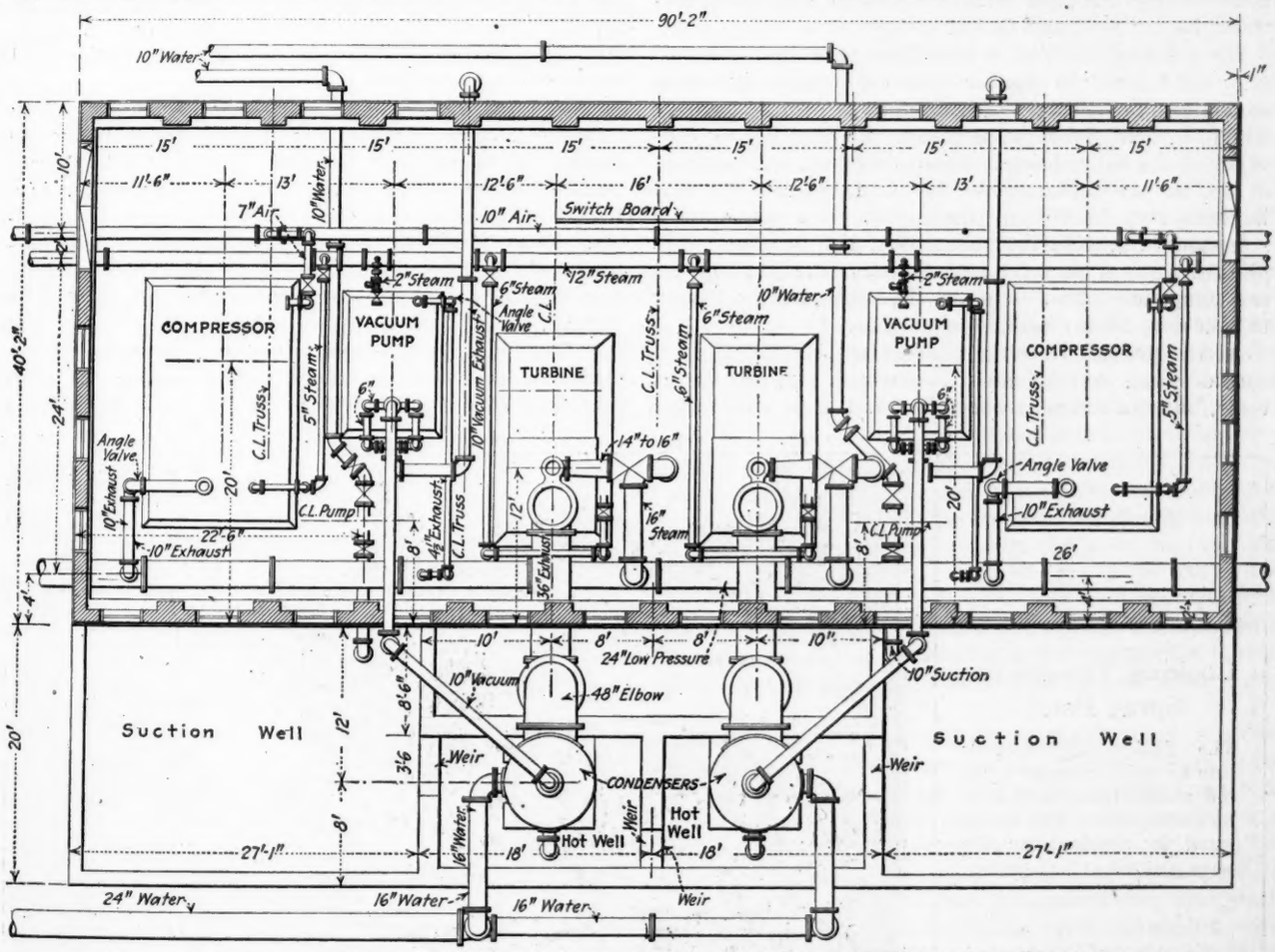


FIG. 1. PLAN OF THE PRICE-PANCOAST POWER HOUSE, SHOWING ARRANGEMENT OF MACHINERY

Balance in the arrangement of this plant is immediately apparent. The main header runs completely through the building and brings steam from both directions.

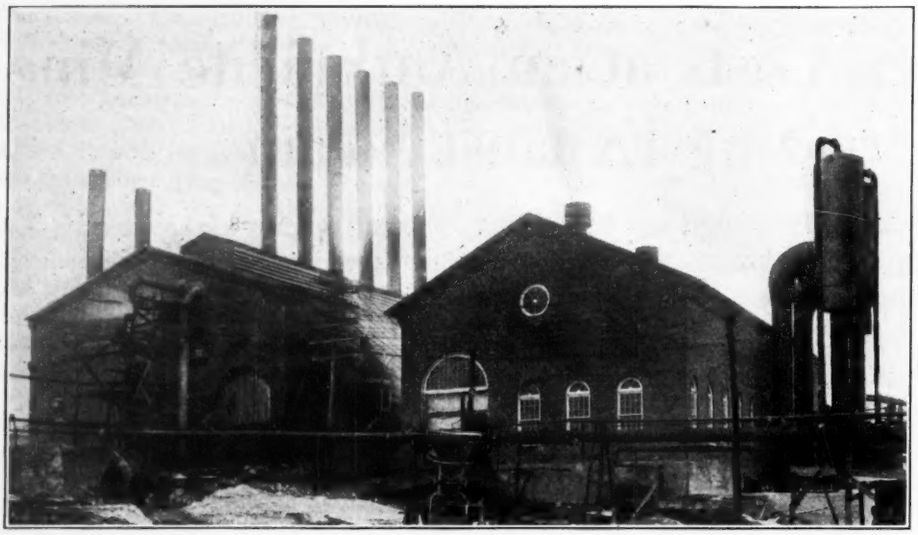


FIG. 2

General View of the Plant

Long steam transmission lines, characteristic of the anthracite region, and which this plant is designed to render unnecessary, appear prominently in the foreground.

only one stoker at a time. Temporarily separate blowers are being used for each boiler. When all the stokers are in place so that the old locomotive boilers can be disposed of blower fans will take care of all the air requirements simultaneously. The stokers are driven by a temporary engine, but this will be replaced by electric drive as soon as the power plant is in operation. There is no separate control for the stokers as they are driven by a line shaft. At present their rate of speed is from 1½ to 2 in. per minute. A large Cochrane feedwater heater is located in the boiler room.

By reference to Fig. 6 it will be seen that the coal is brought from the breaker to the boiler plant by means of a dragline scraper which discharges into a conveyor which, in turn, delivers the coal to the distributing conveyor in the boiler house. These conveyors have a speed of 98 ft. per minute. As for some reason the coal bunkers may be full provision has been made for a storage pile outside the boiler plant and breaker. This pile furnishes a place for coal whenever the coal bunkers are completely filled. It saves the breaker from having to take care of any boiler-fuel surplus.

At the present time the boiler plant is using a mixture of equal proportions of buckwheat, rice and barley coals, but the company hopes that it will be able to use only rice and barley coals when the new boiler plant is completely finished. The ashes from the boilers are discharged into a dragline scraper that conveys them to the ash dump.

From the preceding description it can be seen that the new boiler plant when entirely completed will be, as far as possible, mechanically operated, whereas in the old plant everything was done by manual labor.

At present the boiler plant furnishes steam to the main hoisting engine, the hoist for the main shaft, the breaker engine, the shop engine, three fan engines, a number of pumps in the mine, two air compressors and five underground steam hoists.

Close to the boiler house is the new power plant. This building is of brick with steel roof trusses and concrete floors. It houses two General Electric Curtis steam turbines operating at 3,600 r.p.m. The generator is a 1,250-kva. machine working at 2,300 volts. Both steam- and motor-driven exciters are furnished with these outfits while a 12-panel General Electric switchboard is provided for the proper distribution of the current. The vacuum pumps for the turbo generators are 8 x 12 and 20 x 12. Besides the electric units in the power house there are two large Ingersoll-Rand two-stage air compressors, with the steam ends 18 and 29 x 20 and the

FIG. 3

Looking Toward the Spray Pond

The fuel-supply scraper line as well as some of the old steam lines may here be plainly seen. The spray pond is visible near the rear ground at left center.

air cylinders 16 and 26 x 20. These compressors furnish air at from 90 to 100-lb. pressure. A 5-ton traveling hand-operated crane is provided for handling the larger units in the power house.

The turbines are of the low-pressure type with a regulator permitting the use of high-pressure steam should the amount of exhaust be insufficient. The exhaust steam from the main-shaft hoisting engine will be delivered to the power plant by a 6-in. line. A 10-in. line will deliver the steam from the main-hoisting engine, while an 8-in. line will bring the exhaust steam from the breaker and a 6-in. line from the 21-ft. Guibal fan. This exhaust steam will be delivered to a main of 24-in. diameter and about 100 ft. long located in the power plant. Besides this steam that is furnished to the power plant, the exhaust from the vacuum pumps, from the two compressors and from the water-circulating pumps will be discharged into the 24-in. main. One end of this main will have a homemade flap valve to regulate the pressure of the exhaust steam.

The turbines will be fed with the exhaust steam from the 24-in. main through 16-in. pipes which will be reduced to 14 in. on entering the machines. The exhaust will pass from the turbines to barometric condensers through a 36-in. main. The water from the condensers is pumped to a spray pond designed by the Spray Engineering Co. which is equipped with 170 No. 11A nozzles. The water-circulating pipes are 10 in. in diameter.

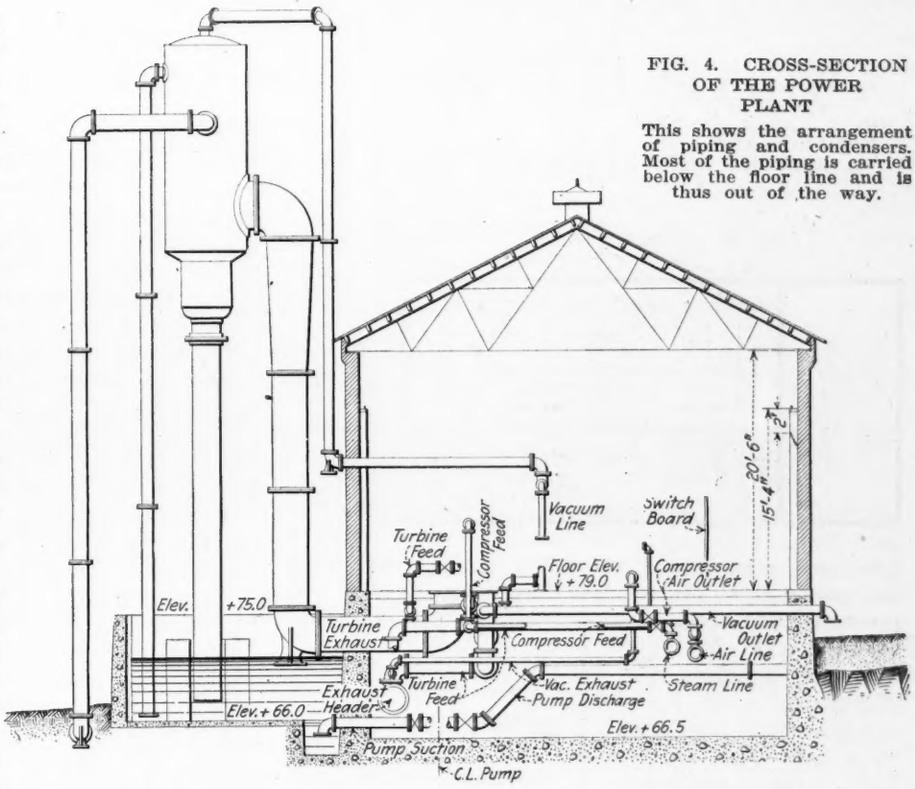


FIG. 4. CROSS-SECTION OF THE POWER PLANT

This shows the arrangement of piping and condensers. Most of the piping is carried below the floor line and is thus out of the way.

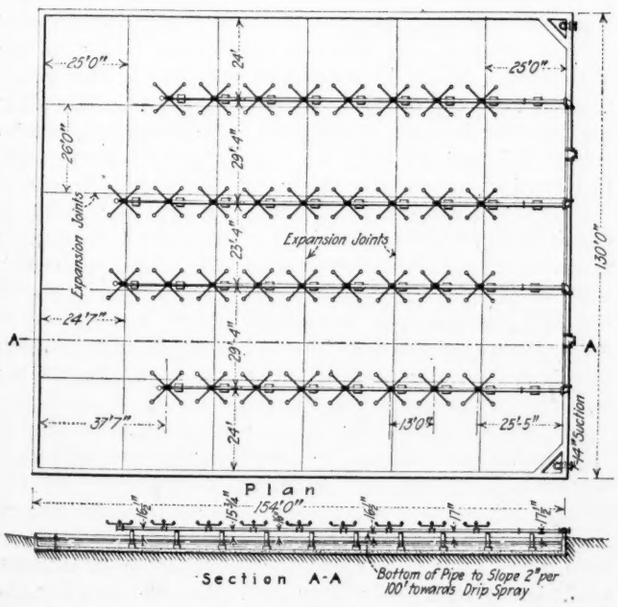


FIG. 5. PLAN AND CROSS-SECTION OF THE SPRAY POND

This spray pond performs the same function as a cooling tower. The fine sprays of warm water give up their heat to the air, cooling the water and permitting it to be used again.

Live steam is delivered from a 20-in. header in the boiler plant to a 12-in. header in the power plant and to a 10-in. main for transmission to the mines for use in hoisting, breaker and fan engines.

Great advantages and economies will accrue to the coal company upon the completion of these improvements. All use of steam underground can be dispensed with and electricity used instead. This means that all the pumps and the five hoists previously mentioned will be electrified. All loss arising from the condensation of steam which hitherto was carried long distances will now be prevented, and the more economical method of distribution of power by electricity will be employed. On the surface one fan engine which is about a quarter of a mile from the power house will be electrified, and thus a further saving of power will be made, for at present a long pipe line furnishes steam to this engine.

It is believed that the plant when completed, by utilizing the full power generated in the power house and not wasting it, will enable the company to discontinue the use of the two locomotive boilers and save the coal that they are now consuming. Furthermore, by using the exhaust steam which until now has been wasted, sufficient power will be provided to furnish the mine with all the current it may require and consequently it may be possible to discontinue the purchase of power from outside.

Ultimately savings will come from four sources: First, that due to the burning of finer-sized coals in the boiler plant; second, that due to the discontinuance of long steam lines on the surface and underground, now causing heavy losses because of the condensation of the steam; third, that due to the utilization of steam which was formerly exhausted into the atmosphere, thus wasting heat; fourth, that resulting from dispensing with the employment of unnecessary labor, required because of the failure to provide suitable mechanical equipment.

From these economies the company will make a de-

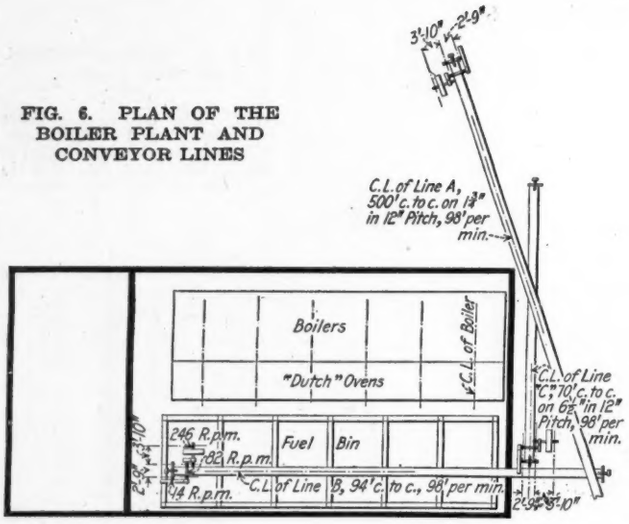

3'-10"
2'-9"
C.L. of Line A, 500' c. to c. on 1⅜" in 12" Pitch, 98' per min.
Boilers
"Dutch" Ovens
C.L. of Boiler
C.L. of Line C, 70' c. to c. on 6⅝" in 12" Pitch, 98' per min.
246 R.p.m.
Fuel Bin
102 R.p.m.
14 R.p.m.
C.L. of Line B, 94' c. to c., 98' per min.
2'-3"
2'-9"
3'-10"

FIG. 6. PLAN OF THE BOILER PLANT AND CONVEYOR LINES

cided saving because of its ability to generate all its own power at no greater cost than it sustained in the generation of only a part. A sheer gain in operation

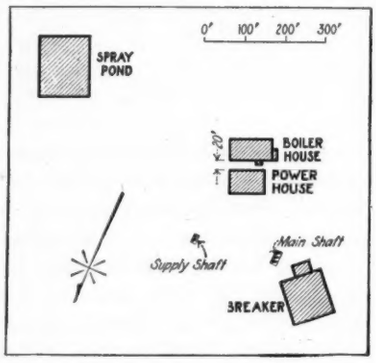


FIG. 7. GENERAL ARRANGEMENT OF SURFACE PLANT
Showing relative positions of breaker, power plant and spray pond.

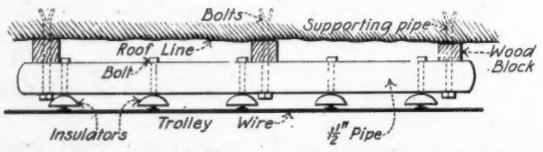
will be obtained equal to the cost of the electricity heretofore purchased.

Uniform Curve on Trolley Wire

By G. E. DAUGHERTY, Pikeville, Ky.

TO INSURE a uniform curve on trolley wire at places in the mine entry where the necessary supports cannot be conveniently placed, the following plan may be of value.

The Pond Creek Coal Co., at Stone, Ky., takes a one-and-one-half inch pipe, bends it to suit the purpose, drills



METHOD OF HANGING WIRE ON CURVES

holes through it spaced three and one half feet apart for bolts to hold the insulators.

The pipe is supported at each end and in the middle by wedge bolts driven into holes drilled in the roof; the bolts are sunk into convenient collar beams supporting the roof.

This arrangement prevents the trolley pole from leaving the wire, saves the pole from possible injury and prevents accidents.

French May Erect Coke Ovens in Lorraine

Desire to Free the Iron and Steel Industry of the Province from Entire Dependence on Germany for Coke

REHABILITATION of the iron and steel plants of Lorraine by France is a perplexing problem owing to fuel difficulties. When the French took over the plants, according to the report of Trade Commissioner J. F. Butler, many were found to be in a run-down state, due to intensive exploitation and lack of upkeep during the latter period of the war. In many cases damage was deliberately done to the machinery by the Germans. During the past year a very large part of this damage has been repaired, and the majority of the plants now are in very fair condition.

At the present time the Lorraine plants are turning out only about one-third of their pre-war production. This is due principally to the lack of coke for the blast furnaces. Before the war France consumed about 12,500,000 tons of coke, of which it produced only about 6,200,000 tons. The resulting deficit is augmented to the extent of 4,900,000 tons by the annexation of Lorraine, of which the production is slight, making a total deficit of 11,100,000 tons.

It is true that the French acquisition of the Saar opens to them rich sources of coal supplies. Unfortunately the coke produced from this coal is of such a friable nature that it can be used only in small or medium-sized blast furnaces, being quite unsuitable for the large blast furnaces of Lorraine. Coke could be imported from England, but the cost of transport renders supplies from this source practically prohibitive. A similar objection applies in a smaller degree to coke from Belgium, which moreover is available only in limited quantities and is of inferior quality compared with German coke. The Lorraine blast furnaces must continue, therefore, to find their coke in Germany.

By the terms of the armistice Germany was supposed to furnish France 11,000 tons of coke daily. This contract was not adhered to, the Germans alleging various reasons for the non-delivery of coke in the stipulated quantities, especially strikes in the Westphalian coal regions and lack of transports. On May 7 an agreement was reached whereby Germany was to receive 1¼ tons of iron ore for each ton of coke sent to Lorraine, Luxemburg, Saar, or Meurthe-et-Moselle.

Germany should now furnish France with coke to the extent of 13,000 tons a day. Although the amounts received during the latter part of 1919 were far greater than those of preceding months, they did not exceed one-half the quantity stipulated. This is a source of much embarrassment to the Lorraine industry, which hesitates to contemplate a future of entire dependence on Germany for coke.

In this connection it is interesting to note one of the conclusions made in a report on the iron and steel works in Lorraine by a commission appointed by the British Ministry of Munitions. According to the report, the French are said to be considering the erection of coke ovens in Lorraine and the importation of Durham coal to mix with their Saar coal. In exchange for the British coal they would ship basic pig iron to Great Britain. As matters stand, the French feel that their steel industry is too greatly at the mercy of Germany.

Management Methods That Will Secure Results in Mine Construction

Organizations for Mine Operating Are Seldom Adapted to Construction Work —To Employ Them for Such a Purpose Usually Is a Mistake—Building Procedure Should Be Planned as Carefully as the Plant Design Itself

BY CHARLES GOTTSCHALK*
Bethlehem, Pa.

TO CARRY on simultaneously the various operations involved in constructing the surface layout and in developing the underground nucleus for a modern coal mine of large capacity requires the highest type of organization. Some such provision is necessary if the many forms of leaks and delays are to be kept down to a minimum.

Many glaring examples might be cited where large financial interests have carried work of this nature through to conclusion with organizations absolutely out of harmony and unfitted for their responsibilities. The sums thus dissipated and the valuable time thus lost cannot be accurately estimated, but it requires neither deep reasoning nor close observation to perceive that the possibilities for savings are worthy of the expenditure of considerable effort.

Construction and operation may be kindred arts but ability to succeed in both rarely resides in the same man. The two principal men in mine construction are the engineer and the chief clerk, the business of the latter being much more trying than in operation and requiring ability to prevent misuse and loss of material and keep track of costs.

Not long ago a prominent mining man made the remark that a great many of the new coal mines erected with large production in view with which he was acquainted had undergone a complete turnover in the personnel of their local managements after the high officials had patiently waited and failed to realize promised results. This is often the outcome of choosing an organization adapted only to operating a mine and of expecting it to be able to build one rapidly and economically. The consequence is a failure to keep the ever-increasing details of construction under control. The workmen are first to sense the confusion, and matters go from bad to worse.

When the construction work finally is finished it is then too late to re-establish confidence in the ability of the management, although the work has now progressed to the point for which the men in charge were really selected. When, by reason of the financial strain, those who are providing the capital are forced to investigate, a turnover with its attendant disadvantages appears to be the only solution of the difficulty.

Companies exercising better judgment avoid from the beginning such a catastrophe by starting to build the plant with an organization experienced in the kind of work in hand and with full knowledge that it must "make good" from the start. Such an organization is not in a position to excuse its shortcomings in construction work with the hope of accomplishing big things later on.

Naturally the success and progress of the work depend more upon a harmonious organization working in accordance with a well-defined plan than upon any other consideration. Everyone has observed that average methods with concerted push behind them accomplish more than much mechanical equipment and original ideas handled in a disconcerted or confused manner. In the latter case problems in methods of construction which are worthy of much preliminary study appear unannounced and must be hastily decided, snap judgment often resulting. Some of these experiments will surely prove costly and embarrassing.

Jobs begun in this manner are seldom completed along the lines that were planned when the work started, but are likely to be rushed through in a slipshod manner in order to make up for the time lost in trying out each pet notion suggested. Later the job proves a failure and the design, rather than the poor method of construction, receives the blame, while high maintenance or operating costs absorb the loss. It is therefore highly essential to provide from the very start for teamwork and systematized planning.

Most of the problems encountered fall logically within the province of an experienced and resourceful engineer. This individual should be not merely a transit man or an inexperienced graduate but a field engineer big enough to secure a thorough grasp of the many units both individually and collectively. It is just as essential to have a first-class engineer work up and execute the plan of construction as it is to employ a reputable firm of specialists to draw tipple and surface building plans and design coal-handling machinery. In many instances, however, the actual work of constructing a mine is prosecuted without co-operation or system, whereas a plan of the work and methods to be employed could be made to afford a degree of assistance equal to that derived from plans of design.

If, as previously observed, the superintendent has been selected by virtue of his former connection with a successful operation, there is a probability that the construction side of a large modern mine continued

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over a long period will prove highly distasteful to him long before the work is completed. He cannot under such circumstances round his organization of coal getters into shape and rest easy, as he may have been able to do formerly. In construction work the scene changes rapidly and the mechanics required to-day must be replaced by those of another trade next week, and so on to the end. The successful superintendent of construction must be a tireless worker who is ever on the alert.

Executive Ability as Good as Knowledge

Complicated blueprints reveal but little in detail except those experienced in the art of reading them, and even then much care and study are sometimes required if all the essentials are to be grasped. A man handicapped by a lack of this technical experience cannot fairly be charged with the responsibility of planning an effective construction campaign because he cannot grasp the details of design until the jobs are well under way and must likewise reserve any unprejudiced criticism until so late that the errors cannot be rectified without more or less additional cost or delay. By the same token the methods of doing the work cannot be planned ahead and the proper tools and equipment provided and estimates of the time required cannot be furnished to the greatest advantage. Some mine superintendents not technically inclined are nevertheless broad enough to recognize their own limitations and have the executive ability to develop the best in their subordinates by not being jealous of the superior specialized knowledge of various department heads. Men of this caliber, however, are sadly in the minority around the coal mines.

In any event there should be no division of authority between the engineer and the superintendent. The entire responsibility for construction methods and progress should be placed upon the shoulders of the man who has been selected for the work because of his individual fitness to handle it. Even though the prospective mine superintendent is not qualified for the management of the construction work, he still has this field of usefulness that he can lay the foundation for a successful operating organization which will be ready to undertake the work of operation as soon as construction approaches its end. By accomplishing this important work he will establish his company on a basis that will thereafter reflect credit on himself.

Chief Clerk Should Be Carefully Chosen

The executive in charge having been carefully selected, the matter of choosing a chief clerk should receive similar consideration. The scope of the clerk's duties are likely to be underestimated unless it is remembered that several hundred carloads of miscellaneous material are required for the job, with the possibility that many shipments may be delayed in transit or be lost or may arrive with shortages. These items must all be checked and followed up until shipments are complete. Materials arriving are sometimes stored and later charged out to the various jobs.

The constant movement of the labor gang from one job to another adds greatly to the clerical work, and the distribution of the charges to the proper accounts must be tabulated promptly and intelligently in the field in order that the local management may study the unit costs as the work progresses and detect any abnormal outlay in time to calk the leak.

Furthermore most of the small business transactions within the organization and many without it are handled personally by the clerks, and upon their conduct largely depends the reputation which the company acquires regarding its policies and business integrity.

In one instance a certain chief clerk possessed of the necessary intelligence and capacity for work abused his position when dealing with those to whom he felt no responsibility for his actions. As the result of an oversight on his part which could have been disposed of by a simple explanation he became insulting to a foreman many years his senior in age. The foreman left the office bent upon quitting. When the clerk was informed of his blunder, he responded, "To hell with him; let him quit if he wants to."

The foreman was one of the most valuable men in the organization and especially hard to replace at that particular time. Others were constantly receiving the same lack of consideration while endeavoring to get information necessary to the best interests of the company.

Possibly much of this indifference arises from a lack of knowledge of its possible harmful effects. If so, it is time to present the matter to the offenders in a light that will give them a keener insight into their duties to the company. Otherwise discord is likely to spread and an owner or general manager of a property desirous of giving everyone a square deal will unknowingly have his policies toward others entirely misconstrued because of their faulty execution by the officials in whom he has reposed his confidence. To avoid the development of such a condition the importance of carefully selecting the superintendent and chief clerk should be thoroughly appreciated.

Officials Should Respect the Management

Here let me digress. Some long-experienced officials never seem to be able to learn the fact that their own work is made much lighter by always referring to the management above them in respectful terms. They try to excuse their own acts of indiscretion by confidentially telling various employees that the orders to which exception is made came from the "Big Boss." Disintegration of the organization must surely follow such a policy, because the best tone in any organization is secured when the bosses and the men alike feel that the president of the company is a genuine fellow. This sort of respect generates an influence for good in every employee of the company. And yet the possibilities thereby to be secured are ignored by many superintendents.

Assuming, however, that from the start two men of large caliber have been chosen the *esprit de corps* will be whatever these two heads insist upon maintaining, even though only reasonable care is exercised in the selection and instruction of the remaining officials and workers.

Before, or at least as soon as, the actual work of construction begins a complete and accurate contour map should be available. To this should be added the final location of the railroad spur, shafts, buildings both temporary and permanent, and any other improvements contemplated.

It is highly probable that no good roads will be found already constructed up to the building site. It is important therefore that a permanent wagon road be built to the mine and put into shape before much hauling of material becomes necessary. A temporary

water supply is often secured by damming a small natural drain and depending upon the rainfall. Immediately following a heavy precipitation such streams become extremely destructive and unless the dam has been well designed it will become ineffective.

All temporary structures should be plotted on the map or general layout plan upon which the permanent improvements have been located. Thought should be given as to where it will be desirable to unload building materials and place equipment. In this connection the location and design of the temporary office and storeroom may greatly facilitate the work of the entire organization. The temporary building should be of sufficient dimensions to permit of several partitions. The largest section should be large enough to contain the current supply of cement, lime and other perishable building materials.

The room adjoining this should accommodate the clerks. The partition separating the two should be provided with a sliding window with a ledge opening into the large room so that anyone getting materials can conveniently sign a receipt showing the proper distribution. By this arrangement it will be possible to keep stocks under lock and key in practice as well as in theory without too much red tape.

Material Cards Are a Convenience

On a big installation several thousand bags of cement will be required and they will be used on a large number of different jobs. At the beginning a card may be ruled up for each job, on which the estimated amount of cement needed may be shown. Thereafter whenever cement is taken from the warehouse an entry can be made directly on the proper card. This will eliminate much unsatisfactory guess work when accounting for the material used. It also will be possible at a glance to check the quantities used as against the estimated requirements.

The room occupied by the clerks should be equipped with a large number of shelves and bins similar to those in a permanent storeroom. An additional room or two may serve to accommodate the superintendent and engineers. This may appear to be a rather elaborate layout for a temporary structure, but it need not be expensively built, and at a later date the lumber can all be re-used without loss.

Failure to provide from the beginning for handling incoming materials of small sizes, checking each article received against the original order, and then storing in groups properly labeled will lead to all kinds of trouble and delay. If materials and supplies intended for a certain place are thrown into a general store for indiscriminate requisitioning many pieces will be used on odd jobs as the emergency arises, with no charge made for them. For this reason no order for the replenishment of such supplies will probably be made until occasion rises for the use of such duplicates. With such a lack of method unnecessary delay or expensive substitution is sure to follow.

As an aid to keeping track of materials ordered and received for the various jobs a graphic chart will prove most valuable. This may be arranged with a long horizontal series of items, one for each division of the work, such as tipple, hoist house, sub-station, etc., each column to be subdivided into spaces. Coloring in these smaller divisions with crayon to correspond to an adopted legend will show at a glance whether the order has been received completely or partially, in good or bad order, or otherwise. This chart may be hung on the wall of the office and it will act as a daily reminder of the orders which require special attention if a delay in delivery is to be avoided.

Storing and Checking Should Be Systematic

Before deciding on the method to be followed in unloading and storing heavy materials or those requiring considerable space, reference should again be made to the general layout plan showing all improvements, temporary and permanent. When the most advantageous point for unloading and storing of each item or shipment has been selected the corresponding order number should be placed on the material or on a stake driven near the object unless its nature and use are self-evident from the class of material. In this connection the material should always be unloaded or piled so as to be readily checked. A pile so stacked generally occupies less space than if piled haphazard and is less likely to become damaged. Material should not be checked simply according to the kind and number of items on the bill of lading, but also in accordance with the required dimensions shown on the plans and specifications. This will require close co-operation between the chief clerk and engineer.

As previously mentioned, each development should be studied individually, the best method of handling it determined and estimates of the time required based thereon. All the work may then be viewed as a whole and the different items scheduled in the most logical order. This plan should then be consulted from day to day in connection with the graphic material chart.

It is not to be presumed that any such schedule can be followed out precisely as originally planned, as it inevitably will require weekly revision. Nevertheless, such a plan will form a continuous objective to be constantly sought, while it also serves as a stimulus to results. Furthermore, the analysis required for the drawing up of a schedule will be of great value in the selection of the most practical equipment, as the methods of doing the work must be given thoughtful consideration before any estimate can be made of the time required to complete it.

Problems Easily Solved in Well-Planned Work

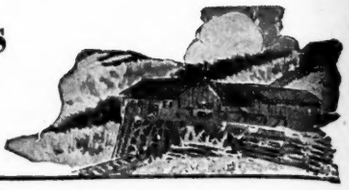
Detailed sketches and methods which have been employed on various installation projects might now prove interesting, but the object of this paper has been to emphasize the policies to be inaugurated before getting deeply into the work. The problems that follow are more or less local and are quite sure to be solved efficiently if the organization is the result of a studied effort and when the field work is systematized, and the details are not left to take care of themselves.

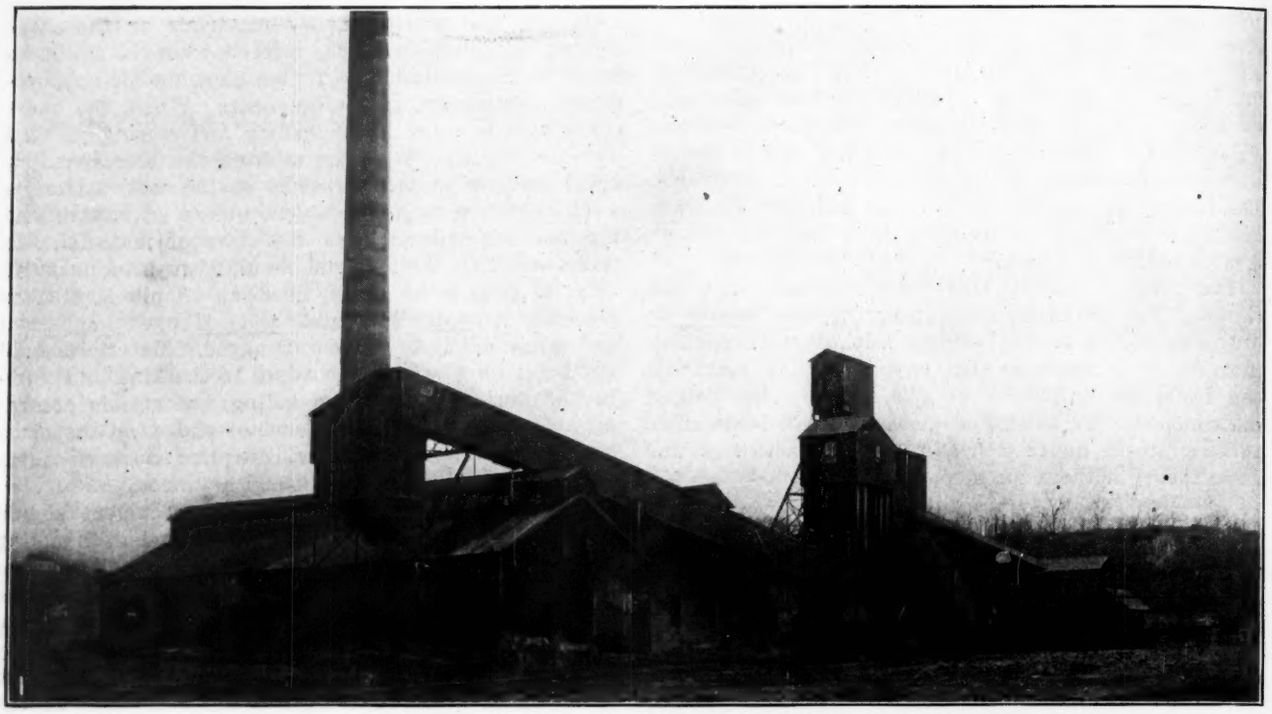
One of the most famous of artists and architects the world has ever produced has said: "Trifles make perfection, and perfection is no trifle."

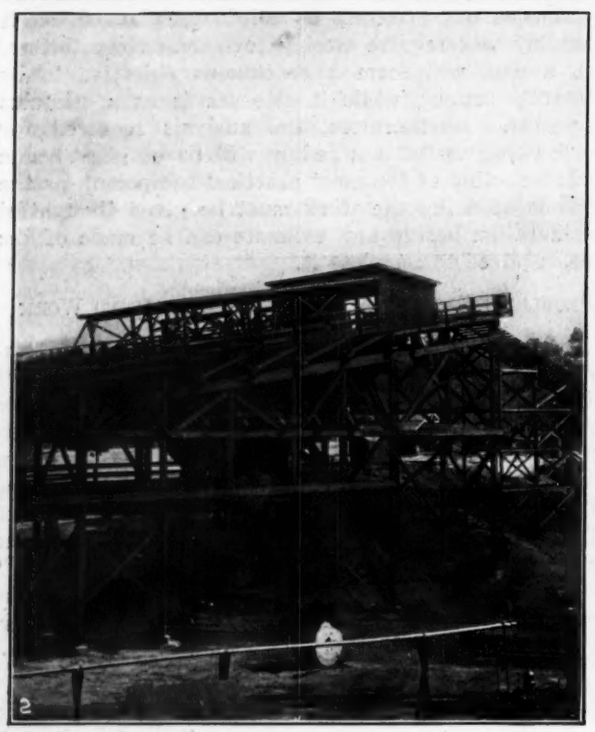
Strike to Release Winnipeg Reds

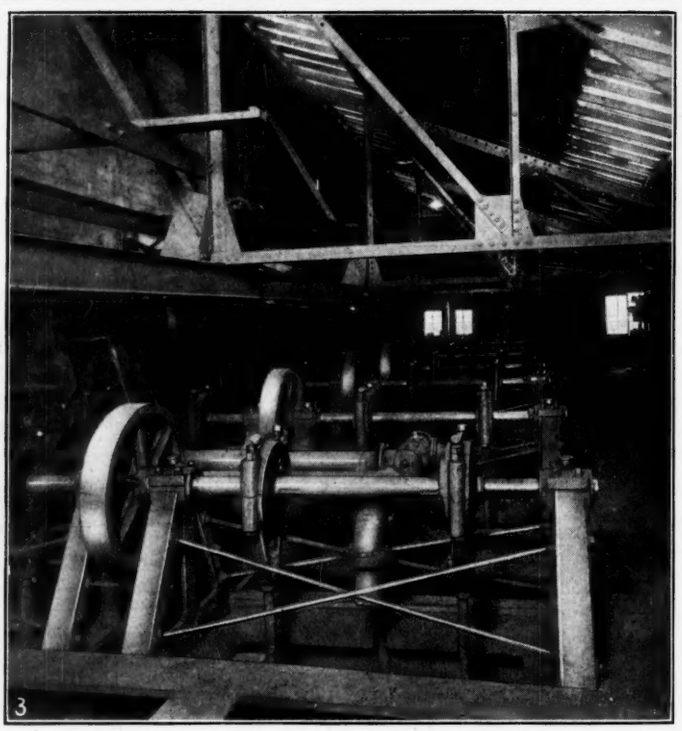
BECAUSE the leaders in the strike which deprived Winnipeg, Man., of all communication with the outside world, paralyzed industry within the city and seriously threatened the food supply, bringing sovietism almost within sight, have not been released on bail, pending a hearing in the higher courts, 15,000 Nova Scotia coal-mine workers struck on May 1, as a one-day protest against the alleged injustice.

Through the Coal Fields With a Camera









Modern Equipment Helps to Increase Production

(1) Mine 18 of the Consolidation Coal Co., Buxton, Iowa—(2) A Rotary Dump of Four-Car Capacity Rotated by Means of an Electric Motor Has Been Installed at the Little Ben Mine of the Woodward Iron Co., Woodward, Ala.—(3) Jig Floor at the Sayreton Washery of the Republic Iron & Steel Co., at Sayreton, Ala.

Many Solid Fuels Can Be Mixed With Oils To Form Liquids or Jellies

Anthracite, Bituminous Coal, Lignites and Peats, Gas Coke, Charcoal, Wood, Sawdust and Industrial Carbonaceous Wastes Can Be Combined with Oil Colloidally

LINDELL T. BATES in a book entitled "American Fuels" to be published shortly by the Mc-Graw-Hill Co., Inc., gives the following information regarding the colloidal fuel which Lincoln W. Bates is manufacturing on a small scale. What follows is taken from the book in question, which volume is prepared for publication by Bacon and Hamor.

"The coal particles [for the colloidal fuel] should be finely divided in order that the mixture may be stored, handled and atomized in the same manner as any other liquid fuel. Tests show that Bates colloidal fuel is filled with particles which have the Brownian movement and that the majority of the particles are about 0.0001 inch in diameter. Some portions of the coal are actually soluble in mineral oils, and the others, being so finely divided, are held in suspension for weeks and even months with hardly any appreciable settlement. The significance of this in connection with the storage and distribution for the fuel will be readily appreciated.

Colloidal Fuel Is Concentrated Heat

"Unless special measures be taken [to comminute the coal] the rate of settlement is as a rule too rapid to allow the composite body to be used as a fuel. The particles are normally stable if sufficiently within colloidal limits of size, and precipitation by electrolytes may be prevented by the use of such 'protective colloids' as gelatine, sodium cleate, dextrin, silicic acid, etc. Bates fuel saves oil and yet makes it possible to store more potential heat in any given space than can be stored where pulverized coal alone is used. The process utilizes substances which have the property of stabilizing, in liquid form, carbonaceous particles up to 40 per cent by weight, many of which are above colloidal size. It is found that coal and similar carbonaceous substances may be simultaneously stabilized and peptized (i.e., some dissolving takes place, and also the particles take up part of the liquid). When peptized, the material becomes spongy in texture, thus reducing the apparent specific gravity and the tendency to settle; the peptizing agent has also a marked stabilizing effect.

"Colloidal fuel may be manufactured in liquid form, in which event it contains 40 per cent by weight of pulverized carbonaceous matter or less, or it may be made in the form of mobile pastes carrying about 75 per cent of particles. Mobile gels may be made from liquids or pastes. Many combinations of these forms may be used, and all comply with the requirements that the fuel be atomizable and that the components be simultaneously combustible. The composite is in three stages of dispersion, viz., solution, colloidization and suspension.

"All carbonaceous substances capable of being reduced to particles by pulverizing or otherwise may be combined with liquid hydrocarbons to form colloidal fuel. Materials which can be used for making the fuel include practically all grades of anthracite, bituminous coal, lignites and peat (even including grades relatively high in ash and sulphur content); pressure-still, smelting and gas coke, charcoals, woods and such byproducts as waste from starch, corn and flour factories, wood pulp, sawdust, etc. The carbonaceous substance should be ground so fine that 95 per cent passes through a 100-mesh screen. Finer reduction is advantageous but not essential. An ordinary coal-pulverizing ball or tube mill is the most economical means of reducing the material to size.

Many Substances May Serve as Dispersion Media

"Oils, tars and pitches have all been used successfully as the dispersion medium for the carbonaceous particles and there is no reason why such liquids as molasses should not be used. Various blends of liquids may be used either for the purpose of utilizing what supplies may be available or to lower the average sulphur and water content, or to obtain a suitable viscosity. The colloidal fuel is not unduly sensitive as regards composition, and precipitation is not so rapid as to jeopardize its passage through pipes, etc., even where high pre-heat temperatures are employed.

"The apparatus needed in the manufacture of colloidal fuel is simple, comparatively inexpensive, and occupies small space. Up to the pre-heater stage colloidal fuel carrying up to 40 per cent carbonaceous particles can be handled as well as heavy crude oil. The viscosity at 20 deg. C. is rarely below 65 deg. Engler, and is generally between 160 deg. and 350 deg., depending upon the composition. At higher temperatures, such as those of the pre-heater, the fuel resembles the lighter of fuel oils. No material change in oil-burning equipment is needed to burn liquid colloidal fuel, but slight modifications and increased pressure may be needed if pastes be used. Increase in pressure alone is sufficient in the case of a gel which is broken up by pumping or which liquefies in the pre-heater.

Colloidal Fuel is Superior to Oil

"The specific gravity of liquid colloidal fuel is usually between 1.03 and 1.32, the flash point about 190 deg. F. and the fire point over 250 deg. F. The thermal value of colloidal fuel is higher than that of oil, and about 5 per cent greater efficiency of combustion has been observed compared with oil under the same conditions. At the moment of ignition the rending action of the oil in the pores of the carbonaceous particles makes extremely efficient combustion certain.

"A paste containing 60 per cent coke and 40 per cent oil yields about 198,000 B.t.u. per gallon, compared with 145,500 B.t.u. per gallon for oil. For metallurgical purposes the character of the flame may be varied over a wide range by varying the composition of the fuel.

Standard Washhouse Design of Reading Co.

Washhouses Are a Great Aid to Cleanliness—They Relieve Miners' Wives of Much Unnecessary Work at Home—A Building That Is Artistic and Efficient and Also Fireproof

ONE of the greatest of aids in securing a state of satisfaction and good feeling among the miners is the washhouse. This feeling is fostered by the fact that the man goes home to his family clean; he does not carry into the house the amount of dirt upon his clothes and his person that he otherwise would. As a result of this it is not necessary for his wife to have hot water ready upon his return and there is no dirt to clean up; no dirty, wet clothes to hang up to dry which when dry will shed their dirt and dust to the floor, necessitating another cleaning operation.

Many washhouse designs, some excellent, others poor, have been made. One of the best of these is that prepared by the Philadelphia & Reading Coal & Iron Co. at Pottsville, Pa. For a number of years this firm has been experimenting with different types and designs of washhouses, with the result that the one described below has been adopted as a standard.

This house is extremely efficient and convenient in design, is readily cleaned, easily heated and comfortable for the men. The building is architecturally attractive and when placed in well-kept grounds makes a pleasing appearance at the mine. The building is either entirely of brick or to a height of 8 ft. is of concrete, surmounted by stucco. The roof is supported by wooden trusses and is covered by asbestos shingles.

The new washhouse at the Eagle Hill Colliery is probably the best that the company has erected up to the present time. The main part of the building is 28 x 70 ft. 6 in., and has accommodations for 348 men. This portion is used as a change and clothes room. The washroom is 16 x 25 ft. and is furnished with 16 showers arranged on three sides of the room. Across the doorway a screen is built to protect the men from cold drafts that might come through the door. The entrance to the building is into the main or change room through a small vestibule which is used to prevent cold air and gusts of wind from entering the building. The inside door is so arranged that it shuts automatically.

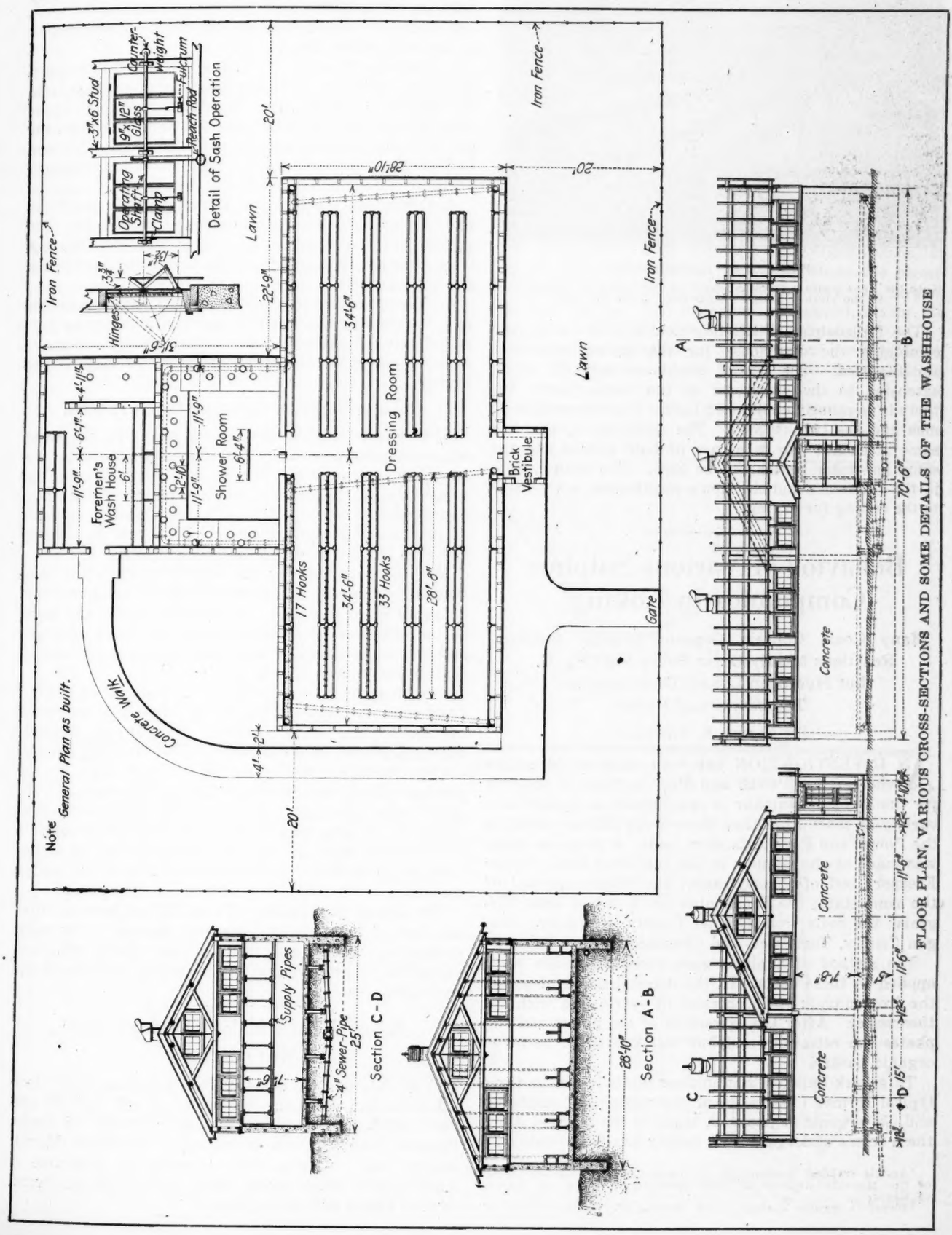
During the day light is now furnished by means of a row of windows that extend completely around the building. These windows are 20 x 21 in. and have six panes of glass. They open outward and are regulated from the inside. The arrangement of these windows is shown in the accompanying drawing. The house at night is lighted by twenty 100-watt electric lights. The building is heated by steam. There are four radiators in the dressing room and two radiators in the shower room. They are made of 2-in. pipe, extend completely along each side of the room, live steam being used as the heating agent. The temperature of the washhouse is kept at 90 deg. F.

The water for the showers is heated in the washhouse and a heater employed consists of a 12-in. pipe carrying water, inside of which is placed a 3-in. pipe carrying steam. The total length of the heating apparatus is 20 ft.

SCHEDULE OF MATERIAL USED IN THE CONSTRUCTION OF THE WASHHOUSE

1 6-in. door lock with knobs.
2 3x3-in. loose-pin butt hinges.
116 2½x2½-in. loose-pin butt hinges.
1 Pair of R-W 20 gem trolley roller bearing barn.
Door hangers complete.
1 Piece of No. 31 trolley track 8 ft. long.
1 No. 68 sliding-door stay roller.
1 No. 70 flush door pull; 1 No. 71 handle door pull.
3 18-in. dia. Swartwout galvanized-iron rotary ventilators.
(To fit on ridge of shingle roof, having 6 to 12-in. pitch on each side.)
200 ft. 4-in. terra cotta sewer pipe.
8 4-in. terra cotta sewer pipe elbows.
12 4-in. terra cotta sewer pipe, single "T" branch 2 ft. long.
2 4-in. terra cotta sewer pipe, double "T" branch, 2 ft. long.
324 2½-in. dia. hothouse pulleys with screws.
324 2-in. dia. galvanized wrought rings made of ⅜-in. round iron.
7,600 ft. ½-in. sash cord.
1,280 ft. 1¼-in. dia. galvanized-iron pipe (for railing).
65 1¼-in. galvanized floor flanges (for pipe railing).
28 1¼-in. galvanized wall flanges (for pipe railing).
1 1¼-in. galvanized ells (for pipe railing).
37 1¼-in. galvanized tees (for pipe railing).
27 1¼-in. galvanized side outlet ells (for pipe railing).
28 1¼-in. galvanized side outlet tees (for pipe railing).
37 1¼-in. galvanized side outlet crosses (for pipe railing).
275 ft. ¾-in. round iron.
16 8-in. dia. nickel-plated shower heads, for ½-in. iron pipe.
16 Shower mixing valves with brass handles, for ½-in. iron pipe.
4 Brass stops with "T" handles, for 1-in. iron pipe.
1 Brass stop with "T" handle, for 1¼-in. iron pipe.
16 Brass compression stops, for ½-in. iron pipe.
2 Brass compression hose faucets, for ½-in. iron pipe.
Hemlock:
No. 1—2 sills, 6x10 in. by 6½ ft. long.
No. 2—16 plates, 3x8 in. by 16 ft. long.
No. 3—18 posts, 6x6 in. by 3½ ft. long.
No. 4—18 rafters, 6x6 in. by 13½ ft. long.
No. 5—9 ties, 6x6 in. by 26 ft. long.
No. 6—18 braces, 4x6 in. by 6½ ft. long.
No. 7—12 caps, 3x6 in. by 14 ft. long.
No. 8—2 caps, 3x6 in. by 18 ft. long.
No. 9—3 purlins, 6x6 in. by 24 ft. long.
No. 10—4 purlins, 6x6 in. by 25 ft. long.
No. 11—4 purlins, 6x6 in. by 16 ft. long.
No. 12—2 purlins, 6x6 in. by 12 ft. long.
No. 13—2 purlins, 6x6 in. by 7 ft. long.
No. 14—96 rafters, 2x6 in. by 16 ft. long.
No. 15—2 rafters (valley), 2x6 in. by 22 ft. long.
No. 16—6 studs, 3x6 in. by 8 ft. long.
No. 17—2 sills, 3x6 in. by 6 ft. long.
No. 18—2 caps 3x6 in. by 7 ft. long.
No. 19—2 ties, 3x6 in. by 7 ft. long.
No. 20—84 window studs, 3x6 in. by 4 ft. long.
No. 21—20 nailers, 3x6 in. by 12 ft. long.
No. 22—50 nailers, 2x4 in. by 12 ft. long.
25 2-in. W.P. plank, 10 in. wide, 12 ft. long.
Surfaced on 1 side
1,600 ft. 1-in. W.P. barn boards, 12 in. wide, 10 and 12 ft. long.
1,600 lin.ft., 1x3-in. W.P. battens.
1 W.P. 4-panel door, 1¾-in. thick, 3 ft. 0 in. wide, 6 ft. 8 in. high.
1 W.P. 6-panel door, 1¾ in. thick, 4 ft. 0 in. wide, 7 ft. 0 in. high.
60 Single window sash 1¼ in. thick, 2 in. top rail, 2¾ in. bottom rail, 6 lights each, 9x12-in. glass, P.&G.
1 Keg of 10d. cut nails; 1 Keg of 40d. cut nails.
36 ⅞-in. head bolts, 9 in. long.
26 ⅞-in. head bolts, 12 in. long.
26 ⅞-in. head bolts, 15 in. long.
600 bags cement; 80 tons sand; 130 tons broken stone.
9 NT-23 truss castings.
9 NT-42 truss castings.
18 NB-64 angle brackets.
9 1-in. dia. truss bolts, 7 ft long.
140 ⅞-in. round cast washers.
324 clothes hooks.
5 Sash operating shafts, ¾-in. dia. by 6 ft. 1½ in. long.
14 Sash operating shafts, ¾-in. dia. 9 ft. 0 in. long.
2 Sash operating shafts, ¾-in. dia., by 11 ft. 0 in. long.
81 Clamps for the above.
21 Counterweights 3-in. dia. by 5 in. long.
21 Levers "A."
18 Reach rods, 2 ft. 9 in. long.
3 Reach rods, 7 ft. 6 in. long.
54 Levers "B;" 54 Links; 54 Fulcrums.
For Asbestos Cement Shingle Roof:
3,500 ft. 1-in. Hemlock flooring.
½ keg 8d. wire nails.
3,000 sq.ft. one-ply tar felt roofing.
30 squares No. 20 gray 12x12-in. asbestos H.C. shingles.
160 ft. No. 20A gray starters.
160 ft. No. 21 gray starters.
110 ft. gray ridge roll.
Copper storm nails and galvanized.
Iron needle point d nails for the above shingles.
Fasteners for the above ridge roll.

In the change room there are eight rows of benches for the men to sit on while changing their clothes. These benches are made of galvanized-iron pipe with portable wooden seats. The floor of the whole building is concrete. Portable wooden walkways or duck walks are placed between all benches and on all aisles. In the bathroom there are other wooden duck walks for the men to stand on while taking their showers. In the washhouse these are made of the best oak. The idea is to have everything in the washhouse easily cleanable. The building is scrubbed out every day and a man is kept constantly in attendance.



INTERIOR OF WASHHOUSE

Note the lines leading from the back of the benches. These lead to the clothes hangers suspended from the roof.

The Philadelphia & Reading Coal & Iron Co. is now combining the washhouse for the bosses with that for the men. The bosses' washhouse is built as an extension to the washroom of the men's house, but there is no connection between them. It accommodates 20 men and has two showers. The advantage is that the same attendant can take care of both houses and the same hot-water heater can be used. The clothes, both in the foremen's and the men's washhouses, are hoisted to the ceiling for drying.

Behavior of Various Sulphur Compounds in Coking*

Many Coals Contain Organic Sulphur—Sulphur Reactions Mostly Occur Below 500 Deg. C., but Hydrogen Lowers Decomposition Temperature of Pyrite

BY ALFRED R. POWELL†

AN INVESTIGATION has been made to determine whether the Powell and Parr method of analysis for the forms of sulphur in coal should be applied to a variety of coals other than those from Illinois on which the Powell and Parr tests were made. A complete study was made of the sulphur in the following coals: Upper Freeport bed of Pennsylvania; the Pittsburgh bed of the same state; the Pocahontas No. 3 bed of West Virginia; the coals from Letcher County, Kentucky; Morgan County, Tennessee, and Cherokee County, Kansas.

The method of analysis gave excellent results when applied to these coals. In the determination of pyrite the iron-sulphur ratio checked in every case with the theoretical. After the extraction of the pyrite and sulphates the remaining sulphur was proved to be of an organic nature.

This work indicted that sulphur exists in coal in three typical forms: (1) Pyrite of marcasite, (2) sulphates, and (3) organic sulphur. A study of the changes which these forms undergo during coking has been made on a variety of coals, and the following five classes of reactions established:

1. Complete decomposition of the pyrite and marcasite to ferrous sulphide pyrrhotite and hydrogen sulphide. This reaction begins at 300 deg. C., is complete at 600 deg. C., and generally reaches its maximum between 400 and 500 deg. C.
2. Reduction of sulphates to sulphides. This reaction is complete at 500 deg. C.
3. Decomposition of the organic sulphur to form hydrogen sulphide. In the primary decomposition from one-quarter to one-third of the organic sulphur is thus affected, but the byproduct gases traveling through the coking mass increase this reaction to as much as one-half of the organic sulphur present. Primary decomposition is most active below 500 deg. C.
4. Decomposition of a small part of the organic sulphur to form volatile organic sulphur compounds. The greater portion of these find their way into the tar. This decomposition occurs at the lower temperatures of the coking process.
5. Disappearance of a portion of the ferrous sulphide and pyrrhotite, the sulphur apparently entering into combination with the carbon. This reaction seems to be most active in the neighborhood of 500 deg. C. and higher.

ORGANIC SULPHUR CHANGES ITS CHARACTER

The organic sulphur not accounted for by the above reactions undergoes a decided change in character between 400 deg. and 500 deg. C.. and shows none of the properties of the original coal sulphur. From these experiments it would not seem that the relative amounts of pyrite and organic sulphur in the coal have much effect on sulphur distribution during coking.

Methods for changing the sulphur distribution were studied so that the minimum amount of sulphur would be retained in the coke. A complete study was made of the efficiency as desulphurizing agents of hydrogen and of gases containing hydrogen when passed through coal in the process of coking.

The effect of the hydrogen on the removal of sulphur from coke was very noticeable, in some cases nearly all of the sulphur being removed as hydrogen sulphide during a period of three hours. The ordinary sulphur coking reactions were affected in two ways by the passage of hydrogen through the coking mass: (1) the pyrite was caused to decompose at a much lower temperature; (2) the coke sulphur, which is presumably in combination with carbon, was eliminated at an almost constant rate at the higher temperatures of the coking process.

The size of the particles of coal did not seem to affect the rate of evolution of hydrogen sulphide. For gases containing hydrogen, the desulphurizing efficiency seemed to be proportional to the partial pressure of the hydrogen.

*Article entitled "Sulphur in Coal and Coke," published as one of the Monthly Reports of Investigations of the U. S. Bureau of Mines.

†Physical organic chemist, U. S. Bureau of Mines.

King Would Make Sherman Law More Drastic

STATING that he believed that Supreme Court decisions had made the Sherman Law of doubtful efficacy in curbing combinations in restraint of trade, Senator King, of Utah, introduced a resolution, May 1, asking that Congress make a study to determine if supplemental legislation is needed to restrain the formation of trusts and monopolies.

Summer Season Is Best for Coal Shipment in Eastern Ohio

THE accompanying diagram shows in very striking manner why the coal operators in Ohio are not in favor of the seasonal coal rates proposed by Senator Frelinghuysen and others. This diagram, taken from one prepared by D. F. Hurd, secretary of the Pittsburgh Vein Operators Association, and presented as evidence before the Senate committee hearing on the bill to authorize summer reductions in coal freight rates, shows that in this field at least the greater movement of coal is in the summer and that any change in rates tending to increase summer traffic to markets other than the Lakes will only tend to make it more difficult to meet ordinary demands.

The report of the Geological Survey for 1917 shows that nearly 5,000,000 tons of coal were shipped up the Lakes that year from the coal fields in northern Ohio, that this quantity represented 18 per cent of the total production and that of the total Lake movement 94 per cent was in the six months May to October inclusive. It is evident therefore that it is the Lake business that gives the hump in the summer time to the production curve for this field. Other fields have the same conditions, and these fields are the ones to which the seasonal rates do not appeal.

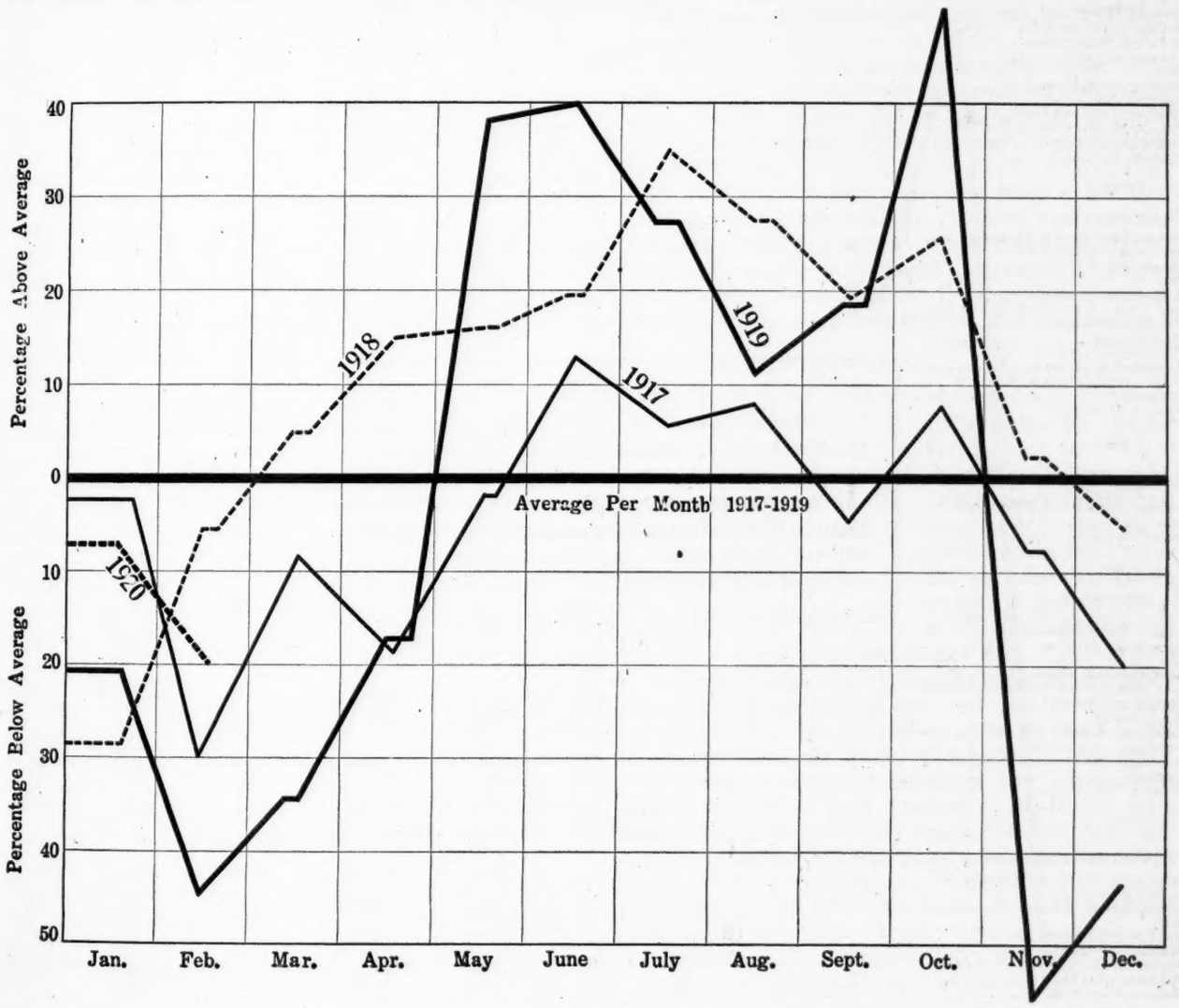
Bituminous Coal Movement to Tidewater During March

SHIPMENTS of bituminous coal to tidewater during March, according to the Geological Survey, established a new high record for that month. The total quantity of bituminous coal dumped into vessels at North Atlantic ports was 3,965,000 net tons. This was an increase over February of 1,066,000 tons, or 38 per cent, and exceeded by 199,000 tons the record of March, 1918, which had hitherto been the largest for that month. The total amount dumped during the coal year 1919-1920 was 39,657,000 net tons.

BITUMINOUS COAL SHIPPED TO TIDEWATER (Net Tons)

	Coal Year 1919–20	Coal Year 1918–19
January	3,185,000	2,954,000
February	2,899,000	2,537,000
March	3,965,000	1,962,000
Coal year total	39,657,000	41,763,000

Coastwise shipments to New England during March were the largest in any month since the armistice.



SEASONAL FLUCTUATIONS IN COAL PRODUCTION IN THE PITTSBURGH NO. 8 FIELD OF OHIO

The production by months is shown for the period January, 1917, to date in terms of percentages above or below the average monthly production for the three years 1917, 1918, 1919 (971,122 net tons).

The total quantity—954,000 net tons—was 20 per cent greater than that of February and nearly twice as great as during the corresponding month last year. The coal year, however, closed with the cumulative shipments far behind those of the preceding year. The total for the year ended March 31, 1920, was 9,172,000 net tons, as against 14,373,000 tons the year before. The decrease was 5,201,000 tons, or 36 per cent.

BITUMINOUS COAL SHIPPED TO NEW ENGLAND VIA TIDEWATER
(Net Tons)

	Coal Year 1919–20	Coal Year 1918–19
January	804,000	721,000
February	793,000	554,000
March	954,000	490,000
Coal year total	9,172,000	14,373,000

Overseas exports during March were 1,033,000 tons, or at the rate of 12,396,000 net tons per year; February exports were 718,000 tons.

EXPORTS FOR JANUARY, FEBRUARY AND MARCH COMPARED

	January, Tons	February, Tons	March, Tons
New York	.....	.....	.....
Philadelphia	103,000	43,000	34,000
Baltimore	174,000	58,000	83,000
Hampton Roads	591,000	553,000	858,000
Charleston	29,000	64,000	58,000
Total	897,000	718,000	1,033,000

Compared with February, this was an increase of 315,000 tons. Exports fell off at Philadelphia and Charleston but increased sharply at Hampton Roads.

Railroad Shipments for January

SHIPMENTS of coal and coke carried over fourteen leading railroads during January, 1919 and 1920, compiled by the U. S. Department of Commerce from reports furnished by the roads are as follows:

Coal and Coke Shipments for January, 1919, and January, 1920, Compared

Classes and Railroads	Originating on Line 1919	Originating on Line 1920	Received from Connections 1919	Received from Connections 1920	Total 1919	Total 1920
For Revenue Only						
Anthracite:	*Short Tons*	*Short Tons*	*Short Tons*	*Short Tons*	*Short Tons*	*Short Tons*
Buffalo, Rochester & Pittsburgh	.....	.....	13,730	14,343	13,730	14,343
Buffalo & Susquehanna	.....	.....	179	2,446	179	2,446
Chesapeake & Ohio	530	1,304	2,756	4,200	3,286	5,504
Erie	711,408	646,637	232,180	263,283	943,588	909,920
Huntingdon & Broad Top	.....	.....	.....	56	.....	56
Pennsylvania	491,776	445,676	422,914	439,476	914,690	885,152
Pittsburgh & Lake Erie	.....	.....	48	.....	48	.....
Pittsburgh, Shawmut & Northern	.....	.....	1,436	2,125	1,436	2,125
Virginian	270	200	99	100	369	300
Western Maryland	.....	.....	32,980	26,186	32,980	26,186
Totals	1,203,984	1,093,817	706,322	752,215	1,910,306	1,846,032
Bituminous:						
Buffalo, Rochester & Pittsburgh	732,644	663,518	28,301	13,167	760,945	676,685
Buffalo & Susquehanna	117,326	155,949	188	.....	117,514	155,949
Chesapeake & Ohio	1,801,680	2,319,046	179,507	200,920	1,981,187	2,519,966
Erie	31,239	40,760	860,986	884,957	892,225	925,717
Huntingdon & Broad Top	79,258	86,533	114	2,145	79,372	88,678
New York Central (Buffalo and East)	608,677	669,887	.....	.....	608,677	669,887
Norfolk & Western	1,310,803	1,767,969	212,909	262,827	1,523,712	2,030,796
Pennsylvania	3,369,342	3,372,361	815,301	737,801	4,184,643	4,110,162
Pittsburgh & Lake Erie	493,693	558,025	601,437	752,075	1,095,130	1,310,100
Pittsburgh & Shawmut	200,340	221,190	.....	.....	200,340	221,190
Pittsburg, Shawmut & Northern	42,474	69,230	28,768	40,436	71,242	109,666
Virginian	380,915	492,073	57,721	61,458	438,636	553,531
Western Maryland	287,139	433,168	673,415	884,102	960,554	1,317,270
Totals	9,455,530	10,849,709	3,458,647	3,839,888	12,914,177	14,689,597
For Company Fuel						
Anthracite:						
Buffalo, Rochester & Pittsburgh	.....	.....	.....	625	.....	625
Erie	12,474	21,442	.....	817	12,474	22,259
Pennsylvania	8,844	18,339	5,153	6,698	13,997	25,037
Totals	21,318	39,781	5,153	8,140	26,471	47,921
Bituminous:						
Buffalo, Rochester & Pittsburgh	78,398	74,933	543	48	78,941	74,981
Buffalo & Susquehanna	8,199	11,878	.....	.....	8,199	11,878
Chesapeake & Ohio	168,026	210,116	.....	.....	168,026	210,116
Erie	122,716	118,255	256,351	251,507	379,067	369,762
Huntingdon & Broad Top	2,036	.....	.....	1,435	2,036	1,435
New York Central (Buffalo and East)	179,313	154,285	.....	.....	179,313	154,285
Norfolk & Western	204,441	242,792	36,159	57,352	240,600	300,144
Pennsylvania	1,135,163	735,244	40,077	101,899	1,175,240	837,143
Pittsburgh & Lake Erie	23,224	41,064	32,843	27,705	56,067	68,769
Pittsburgh & Shawmut	5,083	4,343	.....	.....	5,083	4,343
Pittsburgh, Shawmut & Northern	3,566	4,693	.....	.....	3,566	4,693
Virginian	30,969	40,375	611	1,202	31,580	41,577
Western Maryland	25,537	60,951	48,274	3,982	73,811	64,933
Totals	1,986,671	1,698,929	414,858	445,130	2,401,529	2,144,051
Coke for Revenue and Fuel						
Buffalo, Rochester & Pittsburgh	22,831	16,653	47,155	27,738	69,986	44,391
Buffalo & Susquehanna	25,145	32,186	.....	39	25,145	32,225
Chesapeake & Ohio	53,478	38,572	8,284	8,161	61,762	46,733
Erie	13,631	39,798	28,635	35,227	42,266	75,025
Huntingdon & Broad Top	6,769	3,654	1,534	11,210	8,303	14,864
Norfolk & Western	165,238	89,916	20,258	20,853	185,496	110,769
Pennsylvania	695,653	651,667	182,235	151,099	877,888	802,766
Pittsburgh & Lake Erie	61,549	43,472	563,325	424,425	624,874	467,897
Western Maryland	5,401	3,282	47,531	14,711	52,932	17,993
Totals	1,049,695	919,200	898,957	693,463	1,948,652	1,612,663

NOTE—No report was received from the Baltimore & Ohio Railroad.

Though Silent, Holland Has Acute Need of Coal

By M. Meredith
Liverpool, England

MOST people who are not intimately acquainted with the coal trade in Holland are apt to consider the position of that country as fairly satisfactory. This belief has apparently been confirmed by the silence of Holland on this point while most other countries have been crying out their needs as loudly as possible.

Before the war the quantity of coal consumed in Holland amounted to about 10,000,000 tons annually, and of this quantity only 636,924 tons were supplied by the domestic collieries. Apart from the supply of Dutch consumers a large transit trade was carried on, the figures for 1913 being as follows:

HOLLAND'S COAL SUPPLY IN TONS DURING 1913

Imports from Germany	17,920,274
Imports from England	1,958,698
Imports from other countries	511,692
Total production of Dutch Coal	1,774,140
	22,164,804

EXPORTS OF COAL IN TONS FROM HOLLAND IN 1913

Exports to Belgium	7,355,109
Exports to other countries	4,662,251
	12,017,360

HOLLAND'S COAL CONSUMPTION IN TONS IN 1913

Consumption of coal in Holland	10,147,444
Foreign coal	9,510,520
Dutch coal	636,924

After the close of war it was hoped larger supplies of foreign coal could be secured, but such supplies were not so large as might have been expected. No definite figures are yet available, but the total quantity imported in 1919 is estimated to be under 2,500,000 tons, and this figure was favorably influenced by the importation from Belgium of about 900,000 tons during the first half of the year. The Belgian authorities thereupon prohibited the export of coal to Holland, and no further supplies were received from that country. The imports from Germany remained stationary, and a limited quantity was again imported from England, while during the last few months of the year American coals also were imported.

Pre-war coal consumption by Holland was approximately 10,000,000 tons annually, of which only 636,924 tons were produced by domestic collieries. Exports were about 12,000,000 tons. With the approval of the Entente governments Germany will supply 2,250,000 tons this year. Prospects for the immediate future are anything but hopeful.

The output of the Dutch collieries could not be further increased in 1919, 3,600,000 tons being produced by them, bringing the total supply to just over 60 per per cent of pre-war consumption. The Government Coal Office, on the other hand, had estimated the following quantities to be the minima required to cover only the barest needs:

ESTIMATED COAL REQUIREMENTS IN TONS

Domestic purposes	2,100,000
Industry	4,100,000
Railways	900,000
Shipping	600,000
	7,700,000

It will be observed that Germany occupied first place, outdistancing all other countries in supplying Holland with fuel. The imports from that country, furthermore, were rapidly rising; while, on the other hand, imports from England were steadily decreasing.

After the outbreak of war foreign supplies quickly dropped, and though the production of Dutch collieries was increased and the export of coal prohibited during 1915, it became evident more stringent measures were required, since the normal demand could no longer be met. In the early part of 1916 a Government Coal Office was instituted to distribute the available supply and to take measures to increase it. No expense was spared to increase the output of Dutch collieries, the largest and most important of these being state-owned and managed. The output during that year reached 2,600,000 tons, or an increase of over 50 per cent compared with the highest pre-war production. Only 5,500,000 tons were imported, bringing the total supplies during the year to about 80 per cent of pre-war consumption.

In 1917 the position became decidedly worse. The output of the Dutch collieries increased to over 3,000,000 tons, but the imports fell to 3,000,000 tons, leaving a shortage compared with pre-war consumption of 4,000,000 tons.

It should not be overlooked that prior to the war the consumption of low-grade fuel such as peat was already fairly important, and that the average quality of the coal was superior to that used at present. A large percentage of the output of the Dutch collieries is meagre coals or those of low heat content, and the average calorific value is considerably lower than that of the foreign coal used formerly.

Prospects for the near future are anything but hopeful. The output of the Dutch collieries cannot be increased further to any considerable extent during the next few months, and it is feared that the quantity of foreign coal that can be imported will not be much larger than it was in 1919.

Subject to approval by the Entente, an arrangement probably will be entered into with the German government, insuring for Holland a supply of about 1,000,000 tons from the Ruhr Valley and 1,250,000 tons from the coal fields in Germany adjoining the Dutch frontier, which are owned and worked by a Dutch concern. Including these quantities about 6,000,000 tons will be available, leaving a shortage of 4,000,000 tons compared with pre-war consumption, or, taking the estimate of the Government Coal Office as a basis, at least 2,000,000 tons will be required for the barest needs of Holland, and the only countries she can look to for any further supplies are England and the United States.

It is important for the reader to bear in mind that the statistics quoted by Mr. Meredith are from official reports and that the Netherlands records any coal passing through the country, such as coal from Germany or Belgium, as imports and as it leaves the borders of the country, the same coal is reported as exports. The result is a showing of exports far in excess of domestic production or even of domestic consumption. This duplication should be clearly kept in mind.—Editor.

Coal Operators Question Good Faith of Trade Commission

Action Requiring Monthly Cost Reports After Adverse Decision by Justice Bailey Surprise to National Coal Association

WHILE no announcement has been made as to whether the Federal Trade Commission will issue default notices in case coal producing companies, other than the Maynard Coal Co., fail to make monthly reports to the commission, it is the inference from the letter of April 26 and the attitude of the commission, that default notices will be issued. A very general opinion among operators is that the issuance of default notices would violate the understanding as to a friendly test suit and many regard the letter of April 26 as being distinctly at variance with the idea that the entire question be left to a test case. The letter of April 26 was printed on p. 838 of the last issue of *Coal Age*. Its purport simply is that the commission will continue to require monthly reports from all producers, other than the Maynard Company. In that connection Rush Butler, the general counsellor of the National Coal Association, analyzes the situation as follows:

It should be understood that this circular letter is not a formal notice of default which subjects operators to penalties for failure to send in the reports referred to. If such default notice is subsequently served on operators who do not wish to comply with the commission's request and do not send in their reports, then those operators will still have 30 days in which to file reports if they see fit to do so.

In this connection, coal operators will be interested to know that the order of injunction entered by Mr. Justice Bailey provides:

"It is hereby ordered, adjudged and decreed that a temporary injunction be and is hereby issued pursuant to the prayer of said bill of complaint, suspending the said order of said defendant."

The order referred to is the order of Jan. 31, 1920, which was the amended order requiring the filing of monthly reports. The order of injunction then goes on to provide that the injunction be entered "restraining said defendant, the Federal Trade Commission, its members, agents, assistants, deputies and employees, from taking any steps or instituting or causing to be instituted any proceedings to enforce said order or to require the plaintiff to fill out and file the prescribed form of report."

While it may be contended that technically the last part of the above order of injunction refers only to the Maynard Coal Co., the plaintiff in the case, nevertheless the first portion of the injunction clearly suspends the commission's order requiring the filing of monthly reports, and it seems improbable that the Federal Trade Commission would undertake to prosecute any proceedings based upon an order which is suspended by an injunction of the Supreme Court of the District of Columbia.

The written opinion of Justice Bailey, filed in the case, is clearly based upon broad fundamental principles that apply to all coal operating companies equally with the plaintiff in the test case. While the institution of proceedings against a coal operating company other than the plaintiff perhaps might not be a technical violation of the injunction, it would clearly be a disregard of the court's announced decision on the fundamental questions of law involved.

There can, of course, be no objection to companies filing the reports with the commission if they desire to do so. On the other hand, no company need file such reports until a notice of default has been served upon it, and even then, in view of the decision of Justice Bailey, there would seem no doubt that the commission's actions to require the filing of such reports could be promptly enjoined. Until the injunction order has been set aside by further order of the court or on appeal, the decision of the Supreme Court of the District of Columbia stands as the law of the land. It is our belief that the Federal Trade Commission will so recognize it and will not take any steps to cause penalties to accure unless the injunction order is reversed on appeal.

The penalty section of the Federal Trade Commission Act, which covers these reports, reads as follows:

If any corporation required by this Act to file any annual or special report shall fail so to do within the time fixed by the commission for filing the same, and such failure shall continue for thirty days after notice of such default, the corporation shall forfeit to the United States the sum of $100 for each and every day of the continuance of such failure, which forfeiture shall be payable into the Treasury of the United States, and shall be recoverable in a civil suit in the name of the United States brought in the district where the corporation has its principal office or in any district in which it shall do business. It shall be the duty of the various district attorneys, under the direction of the Attorney General of the United States, to prosecute for the recovery of forfeitures. The costs and expenses of such prosecution shall be paid out of the appropriation for the expenses of the courts of the United States.

Denies That Coal Property Assets Will Be Distributed

CONTRADICTING reports current in financial circles, W. H. Coverdale, chairman of the Board of Directors of the Pittsburgh & West Virginia Railway, says the company is not contemplating a distribution of its coal property assets vested in the Pittsburgh Terminal Railroad & Coal Co.

The decision of the U. S. Supreme Court in the Reading Company case created the impression that the Pittsburgh & West Virginia would voluntarily segregate its coal company from the railroad so that stockholders of the latter would reap the benefit.

In some quarters, however, it is believed that the three companies comprising the Pittsburgh & West Virginia system will be consolidated as a result of a special meeting of the stockholders to be held following the regular annual meeting in Pittsburgh this week.

Counsel for the company is reported to have informed officials of the system that the company has not been in conflict with the provisions of the Sherman Anti-Trust Act nor will it offer grounds for a Government suit after the new plan becomes operative.

In addition to the railroad and the coal company there is the West Side Belt Railroad, which is controlled by the coal company. The Pittsburgh & West Virginia is the successor of the old Wabash-Pittsburgh Terminal Railway, which was reorganized in 1916.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

Deadlock Continues in Washington Anthracite Wage Negotiations

BELIEVING that with the steady work they have had year after year (broken only, yet not greatly, in the last year) the anthracite mine workers were not entitled to all that was conceded to the soft-coal employees by the Bituminous Coal Commission, the anthracite operators offered only a 15-per cent increase, or thereabout, as has already been stated. The mine workers rejected the offer. The situation seemed ominous, John Lewis having been reported to have said to Secretary of Labor Wilson over the telephone that "the break in negotiations is near."

The anthracite operators offered, it is stated, to arbitrate the matter, but the mine workers were opposed to any such action. The parties were invited to Washington and spent three days with Secretary Wilson presenting their respective claims. After that, May 4, a recess was taken till May 11, Secretary Wilson desiring time to consider the contentions submitted and President Lewis of the United Mine Workers being obliged to go to Indianapolis in connection with his prosecution in the Federal courts for a breach of the Lever Act, for which he and 124 mine workers' leaders and operators have been indicted.

West Virginia Operators Appeal for Cars, Alleging Discrimination

ASKING that relief and reparation be granted as a result of their failure to furnish one hundred per cent of the orders for cars placed by the Monongahela Ry., the Northern West Virginia Coal Operators' Association has brought action before the Interstate Commerce Commission against various carriers. It is pointed out that during the period from July 1, 1919, to March 1, 1920, the Monongahela Ry. was compelled to look to the Pennsylvania R.R. and the Pittsburgh & Lake Erie R.R. for its supply of empty coal cars. Similarly the Morgantown & Wheeling Ry. was compelled to look to the Monongahela Ry. for its supply of cars for coal loading.

Neither line owns any coal-carrying equipment. The capital stock of the Monongahela Ry. is owned jointly by the Pennsylvania and the Pittsburgh & Lake Erie. As a result operators of mines on the Monongahela and Morgantown lines were dependent upon the same sources of coal-car supply as were operators with mines on the Pennsylvania and Pittsburgh & Lake Erie lines.

Attention was called to the fact that the dependent carriers were parties to the "Uniform Mine Rating and Car Distribution Rules." Under these rules the operators on the Monongahela and Morgantown lines were entitled to their pro rata share of cars. Figures are given showing that they received only 72.2 per cent of the cars ordered, whereas shippers on the Pennsylvania and Pittsburgh & Lake Erie received 83.7 per cent car supply.

This complaint is regarded as unusually important because the opinion which will be handed down will establish a precedent. In that connection it may be stated that complaints of car shortage have increased very greatly since the period covered in the plea of the West Virginia operators. It is declared that for the last twenty-two days not an empty car has been placed by the Pennsylvania in No. 8 Ohio district. Many mines on other roads are working only a few hours a week because of car shortage. That this is one of the contributing causes to the abnormally high prices being asked for coal may be seen from the result of a study made in 1917 by Messrs. Garnsey, Norris and Allport, the engineer committee of the Fuel Administration. The study was made in the New River district and was for a twelve-months' period. It shows:

When Car Supply Is Below Normal by This Percentage	Coal Cost Is Above Normal by This Percentage
5	3.0
10	6.0
15	9.0
20	12.0
25	13.5
30	19.5
35	24.0
40	29.0
43	34.5
50	40.5
55	47.0
60	54.5
65	64.0
70	74.0
73	85.0
80	98.0
85	113.0
90	136.0
92	156.0

Filibuster on Water-Power Bill

Just when it was being taken for granted that the Water-Power bill soon would become a law, a formidable filibuster against it was organized in the Senate. At this writing it appears that the bill is in serious danger unless the conferees will consent to modify it materially.

After the passage of the bill by both houses considerable delay resulted in conference due to the inability of the conferees to agree on several points, one of which was the definition of "navigable waters." After a definition was agreed upon the conference report was accepted by the House with only 30 votes against it.

The filibuster in the Senate will be led by New England Senators who object to what they term Federal control of business. Under the definition "navigable waters" as provided in the conference report, it was declared that no one will be able without getting a license from the Federal agency to build a dam for any purpose in any creek or small stream which empties into a river held to be navigable.

Middle-West Consumers Support Seasonal Freight Rates

Declaring That the Opposition to the Idea Comes from Those with Only Selfish Motives, Representative of Iowa Consumers Declares That Seasonal Rates Will Work Great Relief to Coal Situation in the Middle West

THAT the consumers of coal in Iowa are displaying the greatest interest in the seasonal freight rate in the hope that it will become an actuality was brought out with particular clearness at the May 5 meeting of the Frelinghuysen sub-committee. J. P. Haynes, commissioner of the Traffic Bureau of Sioux City, Iowa, and H. F. Sundberg, traffic manager to the Chamber of Commerce of Cedar Rapids, testified at that hearing. Each came well prepared and in the opinion of Senator Frelinghuysen added very materially to the value of the record which is being built up.

Mr. Haynes pointed out that 90 per cent of the coal consumed in western Iowa moves all-rail from southern Illinois mines, an average distance of 800 miles through Mississippi River crossings, where the traffic density is great. As a result each winter sees a great amount of public inconvenience as well as suffering.

Mr. Haynes was a member of a conference committee which made a study of the situation in the Middle West in February. At the conference were five shippers' representatives, five coal operators and five railroad representatives. The railroad men represented twenty of the leading railroads of the Middle Western and Northwestern States. At that conference it was decided that means of increasing the seasonal spread between rates must be resorted to if the general public in those sections of the country were to be properly safeguarded. Mr. Haynes presented other resolutions and communications showing that sentiment in the West and the Northwest is overwhelmingly for the seasonal rates.

By permission of the chairman, George H. Cushing asked Mr. Haynes the following question: "Is it not true that in the past in the territory which you describe there has been a very much larger annual fluctuation in the price of coal than is now contemplated in the rate of freight? Is it not true that this wide fluctuation of 75c. to $1 per ton failed to induce any general buying of coal for storage?"

To this Mr. Haynes replied: "No, the spread in the summer-delivered price and the winter-delivered price, due to the fluctuation, if any, at the mines, has not been of such importance as to encourage the summer movement."

This led Senator Frelinghuysen to ask: "Is it not also true that the consumer has no assurance that the price in the winter will not be just as low as in the summer? Is he not always looking and hoping that the price will be less in the future? Do you not believe that if the consumer were assured that he would have a 50c. differential in his rate, that would induce the buying and storing of coal, particularly after the experience of the past winter?"

To this Mr. Haynes answered in the affirmative, and added: "It is an absolute necessity to show consumers that it is a matter of money to them. When they know they will profit, large amounts will be expended for storage facilities."

Mr. Cushing then declared that after an intimate experience of fifteen years in the very territory under discussion every inducement had been held out to stimulate the summer buying of coal. A profit of from 12 to 25 per cent on money so invested was assured but no summer movement of coal resulted.

Mr. Haynes introduced evidence showing that Indiana and Illinois coal has and is being successfully stored. Some Iowa coal also is being stored under water, he pointed out.

At another point in his testimony Mr. Haynes said: "I have sat with the railroads of the Central West, the operators of Central West, and the consumers in that territory, which includes Chicago, the Twin Cities, and other large centers. All are in accord in advocating seasonal coal freight rates. At a meeting yesterday in New York, which I attended as a member of the Executive Committee of the National Industrial Traffic League, at the suggestion of Chairman Clark of the Interstate Commerce Commission, the question came up as to how the shippers and the railroads can get together at this time to bring about some relief in the pressure on transportation.

"The chairman of that meeting, Mr. Pearson, president of the New Haven road, and Mr. Wright, freight traffic manager of the Pennsylvania R.R., said, 'Let us pass that question because it is very well taken up in the existing bill before the Senate. We will not try to do anything until that is passed.' I feel that that was an expressed approval of this measure, with the added reason that the railroads played a prominent part in drawing up a recent resolution at a meeting in New York City in February of the coal and coke section of the American Institute of Mining and Metallurgical Engineers, of which Herbert Hoover was chairman, and the committee from the American Railroad Association.

"The committee which indorsed this as one of the fundamentals in stabilizing the coal industry consisted of Samuel Rea, president of the Pennsylvania system; F. D. Underwood, president of the Erie R.R.; A. F. Tice, president of the Philadelphia & Reading R.R.; E. J. Pearson, president of the New York, New Haven & Hartford R.R., and J. F. Porterfield, representing C. H. Markham, president of the Illinois Central R.R."

With reference to this Senator Frelinghuysen said that the statement just quoted is a very valuable contribution to the record since it shows that these railroad leaders are committed to the principle involved in the Senate bill.

Mr. Sundberg stated that concrete storage bins, in which the coal is submerged in water, have been in successful operation in Cedar Rapids for several years. Both Iowa and Illinois coal is stored in that manner. He said no difficulty was experienced due to freezing, as the coal was extracted from the bins with clam-shell buckets. He declared that Eastern opposition to the seasonal freight rate is "prompted by selfish reasons and a desire to ignore the rest of the country."

"The interest of the public," said Mr. Sundberg, "is so great that the selfish interests of the few should be

lightly considered. Opposition from the sources from which it has come proves the wisdom of the plan.

"My idea of exempting certain minimum rates from the provisions of the bill is that very few rates would be affected. Any rate of 75c. and under is in effect for a very short haul, probably five to ten miles to the consuming point. There would not be much advantage in storing coal for that short haul since the coal equipment used in that traffic works like a shuttle. It is usually a switch movement. The cars are unloaded promptly and they are back at the mine in a day."

Move to Quash Indictments

ILLINOIS coal operators who were indicted at Indianapolis a few weeks ago for violating the Lever Act, brought individual suits on May 5 in Chicago, asking that the United States Government, through its officials, be restrained from prosecuting them further. Among those who took this action were G. B. Harrington, F. C. Honnold, J. K. Dering, C. M. Moderwell, R. C. Whitsett, R. E. Lee, R. W. Couffer, John T. Connery, E. C. Searles, T. C. Keller, Walter Bogle and H. A. Huskey.

These petitions for injunction are construed as another attack on the constitutionality of the Lever Act, and in this attack a number of Federal officials are named as defendants, among them being Attorney General Palmer, Washington; Assistant Attorneys General L. E. Slack and D. W. Sims, District Attorney F. Van Nuys, all of Indianapolis, as well as District Attorney C. F. Clyne and others of Chicago.

In the petition for injunction a full history since 1916 of wage scale negotiations with the United Mine Workers of America is given, and special emphasis is laid upon the situation which confronted the coal operators at the time of the strike last November. It is charged that the prosecutions resulting from the Indianapolis indictment were an attempt to interfere with the relations between the operators and the United Mine Workers, which relations were entered into at the request of the U. S. Fuel Administration, and with the full knowledge and consent of the Department of Justice. The petition further declares that the charges of the Government, accusing the operators of collecting excessive prices for coal, were made in an indefinite manner, and that the coal industry has suffered great damage became of the resulting inability of the operators to decide what prices would be considered exorbitant and what prices would be considered fair.

The Lever Act comes in for special attention, as the petition states relative to certain provisions of the act that "These provisions are so vague, indefinite and uncertain that they cannot have the force or effect of law within the meaning of the Constitution of the United States, particularly the fifth amendment, and that any penalties exacted under that statute would constitute the taking of property or the deprivation of liberty without due process of law." The petition goes on to protest very strongly against the Government charge that the operators conspired to limit the production and transportation of coal.

These injunction suits will be argued before Federal Judge Carpenter this week and it is believed that if the petitions for injunction are granted, the cases against the coal operators will be dropped.

In the meantime at Indianapolis the operators of Indiana and the officials of the United Mine Workers appeared before Judge Anderson to answer to the indictments of the grand jury. The answer was a series of motions to quash the indictments on the ground that the Lever Law, under which they were made, is unconstitutional, that the President exceeded his authority under the act, and the insufficiency of the indictment. Charles Evans Hughes appeared for the miners and S. D. Miller and James A. Bingham as counsel for the operators. The defense argued that, aside from the fact that the Lever Act was "hopelessly vague and indefinite," it could not be applied, if valid, to sustain the indictment against the coal men in view of the authority given the President to control the industry.

"We shall insist," said Mr. Hughes, "that Congress, no more in time of war than in time of peace, can take away constitutional rights. There is no authority of Congress to maintain a law of this kind."

He particularly directed attention to the portions of the indictment drawn under provisions of the act providing for the prosecution of conspiracies to charge excessive prices, declaring this act is outside every known category of the law.

Simultaneously injunctions were asked by Ohio operators in the Cleveland courts and certain other Illinois operators in St. Louis, to restrain the court from requiring their appearance at Indianapolis.

Non-User Does Not Lose His Rights

THE rule of law under which a mining privilege is sometimes regarded as being a mere license, which may be lost by non-user, is confined to cases where the privilege is limited and no exclusive right in the minerals themselves is granted.

The rule does not apply to a conveyance of "all of the mineral right and coal privileges and rights of way to and from said minerals and coal privileges; also the right to search for all undiscovered minerals and coals upon the land hereinafter described"; and warranting "the above-described privileges unto the grantee forever, free from me, my heirs, and assigns," etc.

This conveyance shows a clear intention to convey to the grantee the perpetual and exclusive right to all the minerals, thereby investing him with title to the minerals themselves. Since there is a severance of the mineral estate from the surface estate, the owner of the minerals does not lose his right or his possession by any length of non-user, nor does the owner of the surface acquire title by adverse possession to the minerals by his exclusive and continued occupancy and enjoyment of the surface merely.

The above-mentioned conveyance includes oil and gas that may be found underlying the land. (*Kentucky Court of Appeals, Scott vs. Laws, 215 Southwestern Reporter, 81.*)

Crowsnest Miners Back to Work

SINCE early in March the Crowsnest mine workers have been idle, but on April 27 the Director of Coal Operations was able to announce that the strike was at an end. It is stated that the United Mine Workers gained a complete victory and that it is now preparing to get a new settlement in accord with the wage agreement in the United Statees, which will mean an increase of about 11 per cent on the present wage.

U. S. Steel Earnings Greater Than in 1919

IN ITS report for the first quarter of this year the U. S. Steel Corporation shows net earnings of $42,089,019, a total greater than for any quarter of 1919. Not since the third quarter for 1918 has the corporation been able to present such an excellent record. After charges, depreciation and provision for preferred dividends, there was a balance of $19,726,866 for the common stock, which was equivalent to $3.88 a share. Against this amount there was nothing other than the regular dividend declaration of $1.25 a share, so that $2.63 a share was carried to surplus. On the basis of $3.88 a share for the first quarter of the year, the full year's earnings on the common stock would amount to $15.52 a share, as compared with a normal dividend rate of $5 a share.

The chief figures in the statement and a comparison with other quarters are shown in the following table:

INCOME ACCOUNT

	Quarter Ending Mar. 31, 1920	Quarter Ending Dec. 31, 1919	Quarter Ending Mar. 31, 1919
Net earnings	$42,089,019	$35,791,302	$33,513,384
Dep. a. f. etc.	10,765,318	12,751,027	10,638,955
Net income	31,323,701	23,040,275	22,374,429
Interest on bonds	5,291,916	5,344,979	5,393,413
Balance	26,031,785	17,695,296	17,481,016
Addition to balance	.....	185,694	.....
Dividends, preferred	6,304,919	6,304,920	6,304,919
Dividends, common	6,353,781	6,353,782	6,353,781
Surplus for quarter	14,373,085	5,222,288	4,822,316

NET EARNINGS BY MONTHS

	1920	1919	1918
January	$13,503,209	$12,240,167	$13,176,237
February	12,880,910	11,883,027	17,313,883
March	15,704,900	9,390,190	26,471,304
First quarter	$42,089,019	$33,513,384	$56,961,424

The present statement conforms in style to that issued last year. No mention is made of the amount set aside to cover Federal taxes. The statement merely says that net income had been computed after making allowance for such requirements.

American Woolen Co. Report Shows 1919 Best Year in Its History

THE annual report of the American Woolen Co. for 1919 was the best in the company's history, the net profits amounting to $15,513,415 after making provision for Federal taxes. In 1918 the net profits were $12,324,084. The net profits of 1918 were slightly higher than those reported in the present statement, but in that year no allowance was made for Federal taxes.

After all charges there was a surplus available for dividends last year of $10,779,804, or the equivalent of $39.89 a share on the common stock, after making allowance for the preferred distribution. In the preceding year the amount available for dividends was $5,572,527, or $13.86 a share on the common. The surplus for the year after dividends was $4,770,804. The report shows that $14,500,000 was restored to surplus from reserve, and that $7,250,000 was set aside as a reserve against a possible diminution in inventory value.

The balance sheet shows no holdings of Liberty bonds, whereas the 1918 report indicated $3,306,400 in such assets. The inventory is the highest ever recorded, totalling $52,990,116, an increase of nearly $15,500,000 over the preceding year. The surplus of the company now stands at $31,754,427.

William M. Wood, president of the company, in his remarks to stockholders, says in part:

"We have been able to increase our foreign deliveries for the year 1919 approximately 100 per cent. Total deliveries amounted to about $4,500,000, unfilled orders $4,800,000, orders which we refused to accept $13,000,000. The volume of foreign orders was so great that we were obliged to cancel many of them, as your mills were unable to fill these orders on account of their sold-up condition or inability to manufacture for deliveries within the time required by customers."

Remedies for Labor Shortage Proposed At Immigration Conferences

PRACTICAL measures to relieve the present labor shortage were proposed by the National Immigration Conference held April 7 in New York City. This gathering included leaders in finance, industry and agriculture, together with labor men and representatives of foreign-born groups in America. The conference was called by the Inter-racial Council, 120 Broadway.

The common interest which drew these varied elements together is the need of greater production, more stable labor conditions and a better understanding between the different races living in America. In other words, better team work is essential. Americans and immigrants should pull together for the benefit of all.

Among the measures proposed were greater protection for the immigrant against fraud, extortion and violence. A Federal assimilation bureau should be established to look after the welfare of the immigrant, help him learn our language and place him where he can work to the best advantage to himself and to the nation. Standards for citizenship should be high, but useless hindrances and red tape should be done away with. An advanced immigration policy was advocated as a remedy for the present labor shortage, including the selection of industrious and thrifty men and women of good character, and their distribution to points where they can do the work for which they are fitted.

As an immigrant may be of great value to the country as an unskilled laborer, regardless of his inability to read, it was urged that the present literacy test be eliminated, which would open the gates to unskilled workers in agriculture and industry, construction, railroads and domestic service, where there is a great need for help at this time. Our present labor shortage is estimated at between four million and five million, and this would be relieved by a policy of admitting immigrants without book learning but of good character, sound body and mind and Old World habits of frugality and industry.

Among the industrial concerns represented at the conference was one coal mining company—the Berwind-White Co., of Philadelphia.

It is stated at the Federal Trade Commission that a very large number of requests is being received from operators asking that the cost reports of the Commission be continued.

Judging from letters and telegrams being received in Washington a rumor has gained wide currency that Senator Lodge intended to press legislation looking to the restoration of price control on coal. Senator Lodge states positively that he has no such plan and it is believed highly improbable that Congress would give, at this time, any serious consideration to a return to price control on coal.

Conferees Reach Agreement on Water-Power Bill

Measure Is Reported Out Which Provides for a Commission to Have Authority Over Development of Water Powers

SENATE and House conferees on the Water-Power Bill, after protracted sessions, reached an agreement on April 30. The bill reported out on that date by the Conference Committee of the Senate and House creates a Federal Power Commission to be composed of the Secretaries of War, Interior and Agriculture, to which is delegated authority over all matters pertaining to the development of water powers in which the Federal Government has jurisdiction or in which it is interested as owner of lands or other property necessary to such projects.

The commission may issue preliminary permits allowing applicants three years in which to make examinations of water power projects, to prepare plans and to make financial arrangements. It also may issue licenses for a period of fifty years from the expiration of preliminary permits. The commission may reserve such projects the development of which in its opinion should be undertaken by the United States itself, and must give preference to states and municipalities, provided the commission deems the plans for same are equally adapted to utilize the water resources of the region.

The bill encourages the building of headwater storage reservoirs with a view to equalizing power production, preventing floods, and in arid states the use of the water for irrigation purposes on the lowlands after the water has been utilized for the generation of power. Provision also is made for the construction of locks in power dams in navigable streams with a view to extending navigation into the upper reaches of rivers. At the expiration of the fifty-year license the government is given the option of purchasing the hydro-electric plants by paying the licensee his net investment in same, or it may issue a new license to the original licensee upon reasonable terms, or to a new licensee who shall in that event pay the original owner his net investment in the plant.

Under the terms of the bill the United States may take over and operate any water-power plant under license in time of war for manufacture of explosives or for any purpose involving the safety of the country. The commission is authorized to make reasonable charges to cover the administration of the act and for the use of government lands and property, and to absorb excessive profits that cannot be prevented by regulation. Licenses are placed under supervision of state public service commissions as to rates to be charged to consumers for power, and also as to regulation of service. Severe penalties are provided for noncompliance with the terms of the act.

This bill is the result of years of work by committees of Congress, and if made a law will be one of the greatest pieces of constructive legislation ever enacted by the Federal Government. Some think its terms are too restrictive to be inviting to capital, especially in view of the fact that great efforts are being made and great inducements offered by foreign countries to secure American capital for development of their water powers. However, practical water-power men consider the terms of the bill reasonably fair. Senator Jones, of Washington, chairman of the Commerce Committee of the Senate and chairman of the Water-Power Conference Committee, in commenting on the necessity for utilization of the energy contained in our falling waters said:

"Through failure of Congress to pass water-power laws under which money could be safely invested with prospect of a fair return, water powers now wasting have been held back for years from development in at least twenty-two states of the Union. I am informed that actual water-power developments are projected to be undertaken upon enactment of this bill having a total capacity of over 4,000,000 horsepower.

"The completion of these projects would open over 4,000 miles of the upper reaches of our streams and rivers to navigation. It means the extension of navigation for an aggregate of 4,000 miles in thirty-five rivers, traversing twenty states. In this way cheap water transportation will be afforded to districts now sparsely settled and congestion of traffic will be relieved in thickly populated centers through the investment of private capital instead of through river and harbor appropriations by Congress.

"Coal shortage brings up again the folly of leaving unused the nation's vast resources of water power. The more these are developed the less desperate will be the fuel stringency. The waste is not alone one of money. It extends in its final direct results to public health and life itself, as these are affected by inability to get coal for heating and for the production of the necessaries of life. It is estimated that $5,000,000,000 of potential water power is lost in the United States every year. This may or may not be accurate, but the simplest reasoning shows that the amount lost is enormous.

"Sweden is paying $46 per ton for coal, which she has to obtain from England, and therefore is proceeding with the work of developing as far as possible the entire 5,000,000 water horsepower contained within its boundaries. The United States must not fall behind European countries in conserving its coal deposits and in developing the vast amount of cheap electric energy contained in its wasting water powers.

"All the available water power should be developed, and in the quickest time possible, in the interest of the economic uplift of the country, of its social regeneration, of its wealth, and in order to permit it to secure its share of the markets of the world. Hydro-electric energy gives us the means of saving our coal, enables us to obtain electricity at a low price, to lower in many cases our industrial costs of production, and to improve our agriculture. It will become the surest weapon in the economic struggle which faces us."

While some objection arose on the floor of the House to the $125,000 item in the Sundry Civil Appropriation Bill for the survey of power distribution in the Boston-Washington industrial area, the item was approved by the House. The objection was made on the ground that this expense should be borne by industry and that it is not a proper activity for the Federal Government. The claim also was made that so long as the House had just objected to allowing the Federal Government to have a hand in the distribution of water power, holding that it was a proper activity only for the States, it would be improper for the Federal Government to meddle in the matter of distributing any other kind of power. In advancing an argument for the item the

chairman of the Appropriations Committee, Representative Good, said in part:

"We are appropriating $125,000 and permitting contributions of a sufficient amount to finish the work, of making a survey of all the power plants, not simply water power but all the power plants within the territory, which is an enormous undertaking. Mr. Murray, the man whose genius put into operation the plan of electrifying the New York, New Haven & Hartford R.R., believes that as a result of this survey not only will the commercial and industrial institutions in this territory be benefited but every farmer along the line who now has a little gasoline engine to churn his butter and grind his grist and things of that kind will be benefited by being furnished power. When the supply of oil disappears he must turn to some other source.

"We may smile at this proposition. We may laugh it out of Congress just as we did by ridicule the proposition of Mr. Langley in regard to the aeroplane. I say to you that it has within it the very things we must adopt to utilize these forces and to make a greater use of coal at the mouth of the mine and at tidewater. It was the testimony of Mr. Murray; it was the testimony of Dr. Smith, director of the Geological Survey; it was the testimony of the director of the Bureau of Mines, that by utilization of the coal in this way, the utilization of the surplus power of the great industrial plant and the public-utility plants, by utilizing their surplus, more than $30,000,000 would be saved every year. At the same time it would open up a plan whereby private capital, not Government appropriation, would be used.

"I would not be in favor of appropriating a single dollar for the Government to go into that kind of a scheme. Private capital should do that. When there is so much of wildcat and watered stocks being circulated and sold, how far would you get in promoting a company of this kind that had back of it only the estimate of some private individual or company? It is intended to have a Government survey and a report, something that would have the stamp of the Government officials on it that the plan was feasible and practicable, and if the supply of oil is to give out within the time specified, we may well stop and consider if we should not study the question where we can get a substitute."

Railroads Ask the Government to Advance Half Billion More for Equipment

IN addition to the $300,000,000 revolving fund that has been provided by railroad legislation, leading railroad executives have informed the Senate Committee on Interstate Commerce that the immediate financial necessities of the railroads demand an advance of $500,000,000 from the Government this year.

The roads need the money to provide new freight and passenger cars and locomotives. These are absolutely necessary for the movement of the year's crops, the executives declared, and if they are not forthcoming there will be during the year the most serious congestion ever known.

The railway executives' representatives who appeared before the Senate committee included President Edward E. Brown of the Pere Marquette road, chairman; L. F. Loree, of the Delaware & Hudson; Henry Walters, of the Atlantic Coast Line; A. H. Smith, of the New York Central; C. H. Markham, of the Illinois Central; E. J. Pearson, of the New Haven, and Samuel Rea, of the Pennsylvania.

When the Cummins-Esch railroad bill passed it provided a revolving fund of $300,000,000 to finance various railroad betterments and expansions. A committee of railway executives undertook the distribution of the fund, and found that from $125,000,000 to $175,000,000 would be available for new locomotives and cars. The railroad heads told the Senate committee, however, that a survey of the needs of the roads shows they should have 226,000 new freight cars, 9,500 passenger cars and 3,000 locomotives, costing $1,600,000,000.

This is far more than could be produced in the next year they said, but since January 1 orders have been placed for 27,776 freight cars and 518 locomotives. Even this will absorb more than the amount available in the revolving fund, they declared, making it necessary to issue equipment trust certificates for the balance.

Freight Movement, 1917 to 1919, Inclusive

CAR service statistics of class 1 railroads of the United States, 1917 to 1919, inclusive, as prepared by Charles E. Lee, of New York, are as follows:

	Year Ended		
	Dec. 31, 1917	Dec. 31, 1918	Dec. 31, 1919
Total revenue freight tonnage	$2,177,247,081	$2,270,035,053	$2,305,868 245
Originating freight tonnage	1,202,000,067	1,264,015,725	1,263,265,890
Avg. daily originating tonnage	3,293,151	3,463,056	3,461,002
Revenue freight cars owned	2,253,111	2,301,947	2,323,262
Total revenue freight ton miles	362,444,397,129	394,465,400,493	400,379,284,206
Loaded freight car miles	15,879,370,777	15,932,049,759	15,028,393,450
Total freight car miles	22,639,356,927	22,695,744,503	22,191,586,263
Number of cars used daily to move originating freight	144,437	140,204	130,112
Tons originating freight handled for each car owned	533.5	549.1	548.0
Number of cars owned to each car required to move originating freight	15.6	16.4	17.8
Ton-miles per car per day	440.7	469.5	472.1
Tons per loaded car	22.8	24.7	26.6
Times necessary to load each car	23.4	22.2	20.6
Avg. number of days between loading	15.6	16.4	17.8

Railroads Seek Raise in Freight Rates to Increase Revenues a Billion Dollars

TO MEET increased cost of operation and to adjust their income to the 6 per cent basis provided in the new Transportation Act, the railroads of the country have submitted to the Interstate Commerce Commission statements showing the need of an increase in revenue amounting to more than a billion dollars a year.

The roads show that while operating expenses have advanced about 100 per cent because of higher wages and increased prices of material and fuel, their revenue has increased less than 40 per cent and they assert that it will now require an increase of 20 per cent to restore the proper relation between revenues and expenses.

The companies suggest to the commission that the additional revenue be gained from freight traffic, leaving passenger rates at the present level. To provide these increases to total revenues without disturbing passenger rates the carriers estimate they will require an average increase in freight rates of about 28 per cent.

According to a report of the State Inspector of Coal Mines, Colorado's output of coal during 1919 was 10406,543 tons, a decrease of 2,251,512 tons as compared with the previous year. Of 12,799 men employed in and about the mines in 1919, 11,874 men worked an average of 221.4 days. Only 925 men worked a smaller average number of days. These were mostly employed in wagon mines which operated only during the winter months.

Big Program Announced for Denver's Four-in-One Convention

AS announced last week, the Rocky Mountain Coal Mining Institute has clubbed its interests with three other mining societies and will hold a grand four-in-one convention that will draw visitors from all over the West. All who intend to be present would do well to pick their hotel and write immediately for accommodation as Denver grows so fast that the present stopping places fail to meet its many needs. The tentative program is as follows:

Sept. 9 (Thursday)—Forenoon: Sessions of the Rocky Mountain Coal Mining Institute, probably at the Albany Hotel, and sessions of the Colorado Metal Mining Association and of the Colorado Chapter of the American Mining Congress at the Brown Hotel.

Afternoon: Mine-rescue contests and coal-mine explosion demonstration at Overland Park.

Evening: Informal banquet at Brown or Albany Hotel to be attended by all mining organizations and be addressed by the Governor of Colorado, Mayor of Denver and prominent mining men.

Sept. 10 (Friday)—Forenoon: Sessions of Rocky Mountain Coal Mining Institute. Sessions of Colorado Metal Mining Association and of Colorado Chapter of American Mining Congress.

Afternoon: First day of the First-Aid Contest at the Denver Auditorium, all teams present competing.

Evening: Opening meeting of all mining organizations at the Auditorium, to be addressed by speakers of national reputation. Program to be arranged by American Mining Congress.

Sept. 11 (Saturday)—Forenoon: Sessions of Rocky Mountain Coal Mining Institute.

Afternoon: Second and final day of the First-Aid Contest at the Denver Auditorium, all teams present competing.

Evening: Award of contest prizes, probably at Lakeside (Denver's main pleasure resort), and after the award some good speakers may address the crowd, or dancing, boating, etc., may be indulged in.

Will Contract For No More Coal Than Can Be Supplied

OWING to the shortage of open-top car equipment and a lack of locomotives to haul the cars, operators who take contracts promising to deliver all the coal that they would mine if they had the car supply which their rating entitles them to, never can by any possibility fill their contracts. Knowing that this is a fact the purchaser who would secure himself makes contracts with several concerns expecting a minimum fulfillment. This gives a false impression among producers that a large demand exists, whereas the amount of coal really needed is far below what is being contracted for.

In order to make contracts that have value the Bertha Coal Co. is basing its agreements to supply coal not on 100 per cent of railroad performance but on 50 per cent. If the railroad gives 40 per cent of the rating then the coal company fills only 80 per cent of its orders whereas under the old contracts it agreed to deliver only 40 per cent.

A clause has been inserted, however, that puts the buyer under a similar obligation. It reads: "It is mutually understood and agreed that the shipments of coal to the buyer for and during each month shall constitute the fulfillment of a corresponding proportion of this contract and that tonnage shall not be cumulative. The buyer agrees at all times to receive coal under this contract before accepting coal from other shippers, and the seller agrees to ship 100 per cent on contract prior to accepting orders for coal not covered by this and other similar contracts."

Federal Trade Commission Issues Modified Cost Form

IN RESPONSE to representations made by some of the anthracite operators regarding the tentative form recently issued for reporting anthracite costs, income and tonnage to the Federal Trade Commission an "optional" form is being prepared, which operators may use, if they so prefer, in place of the form already sent them, in reporting their monthly costs for January, February and March. A conference will be held at the office of the Commission, on May 18, 1920, to decide what form of report should be required for April and subsequent months. To this conference, the "Independent" operators will be invited to send three representatives, and the "Railroad Coal Companies," three representatives.

The Commission states that in making returns on the form already sent out (form C-52), operators may, if they prefer, combine lines 2 and 3 in one return, and show it as "Mining and loading." Operators, in certifying to the balance sheet, may if necessary insert the words "subject to adjustments made in accordance with the rulings of the Internal Revenue Department," following the statement "Certified correct and in accordance with the books."

Foreign Trade Convention To Be Held at San Francisco May 12-15

UNDER the auspices of the National Foreign Trade Council the Seventh National Foreign Trade Convention will be held in San Francisco from May 12 to 15 inclusive. The general theme of the convention will be "The Effect of Being a Creditor Nation."

The council will hold a reception for the visiting delegations of foreign business men and convention delegates in the Palace Hotel on May 11 at 8 p. m. This will be followed by an exhibition of industrial films.

The regular sessions of the conference will be held in the Civic Auditorium each day at 10 a.m., 2 p.m. and 8 p.m. A large number of speakers are listed for addresses and in addition distinguished foreign business representatives will discuss trade opportunities in their respective countries.

Proposes Committee to Investigate Mining Conditions Near Scranton

A COMMITTEE to be composed of five members of the House to investigate the safety of mining and operating conditions in Lackawanna County, Pennsylvania, is proposed in a House resolution introduced by Representative McLane of Pennsylvania. The resolution directs the Bureau of Mines to co-operate with the authorities of Lackawanna County and of the City of Scranton in recommending plans for the solution of the mine-cave problem.

Scale in Pittsburgh Field Waits on House-Rent Decision

Pick-Mining Wage Is $1.11 Per Ton in Thick-Vein and $1.03 in Thin-Vein Coal—Room Turning Is Now $5.40 for a Seven-Yard Neck—Only Machine Differentials Allowed Are Those Between Punchers and Electric Machines—None Is Made Between Breast and Shortwall Cutters

BECAUSE the Pittsburgh Coal Operators' Association wanted to incorporate in the wage scale of that district a rent increase of $27.50 per year, or about $2.30 a month, no decision was reached as to that matter, but all other questions were settled. The contract was signed, however, in the Freeport Field.

It is claimed by the mine workers that one company has five thousand houses and that the increase would mean $137,000 a year. This probably is quite true, but the increase in the repair and replacement costs of that company have been many times that figure. The mine worker is always figuring that the increase means only so much to each man—a mere trifle not to be denied. When the increase is granted it is summed by the mine workers' leaders and the union boasts of the aggregate. When the operator tries to get a small and fair increase on rents the aggregate is emphasized and the small amount per man is overlooked.

This is the new wage scale:

PICK MINING

Thin vein, mine-run, per ton	$1.1164
Thick vein, mine-run, per ton	1.0311
All clay veins, 6 in. and less than 12 in	3.98
Anything over 12 in. in all places, all the rate per foot	3.98
When clay veins run at an angle there shall be paid in all places while it continues, per yard	0.98
Anything 6 in. or less shall be considered a spar, for which shall be paid in all places	1.99
When the spar runs at an angle there shall be paid additional, per yard, in all places	0.52
Room turning, neck not to exceed 7 yards	5.40
Entry, single shift, per yard	2.95
Entry, double shift, per yard	3.50
Entry, treble shift, per yard	4.06
For 12-ft. places per yard	2.21
Breakthroughs between rooms, per yard	2.09
Breakthroughs between entries where slate is taken down, or comes down, and has to be removed, per yard	2.95
Breakthroughs between entries where slate is not taken down, per yard	2.09
Cutting drains, per yard, in entries	0.24
Ripping roof, per yard, in entries	0.31
Pick sharpening per dollar earned	0.0075

Ripping roof and cutting drain in any place to be paid at above price.

MACHINE MINING

(Harrison, Ingersoll, Sullivan, or any other punching machine)

	Mine Run—Thin Vein	Mine Run—Thick Vein
For undercutting in wide work, per ton	$0.2525	$0.2205
For drilling by hand and loading in wide work, per ton	0.7175	0.6857
For undercutting in all narrow work, per ton	0.2525	0.2205
And per yard additional	0.4532	0.4709
For drilling by hand and loading in all narrow work, per ton	0.7175	0.6857
And per yard additional	0.8934	0.9542

For loading and cutting in room turning entry price shall be paid.

Pick sharpening, loading after machines, 0.0075 on dollar; both thick and thin vein.

Loaders to receive 17.39c. per yard in addition to above prices when driving entries double shift.

MACHINE MINING

(Jeffrey, Link-Belt, Morgan-Gardner, or any other chain machine)

	Mine Run—Thin Vein	Mine Run—Thick Vein
For undercutting in wide work, per ton	$0.1692	$0.1494
For drilling by hand and loading in wide work, per ton	0.7708	0.7337
For undercutting in all narrow work, per ton	0.1692	0.1494
And per yard additional	0.2100	0.2468
For drilling by hand and loading in all narrow work, per ton	0.7708	0.7337
And per yard additional	0.9744	1.0346

For loading and cutting in room turning entry price shall be paid.

Pick sharpening, loading after machines, 0.0075 on dollar, thick and thin veins.

Loader to receive 17.39c. per yard in addition to above price when driving entries double shift.

MACHINE DEAD WORK

Thick and Thin Vein

(With Harrison, Ingersoll, Sullivan or any other punching machine)

Clay vein 6 in. and less than 12 in	$2.98
Anything 12 in. or over, per foot	2.98
(Of which the cutter receives 73c. and the loader $2.20)	
When clay veins run at an angle across the room, per yard	0.71
(Of which the cutter receives 15c. and the loader 56c.)	
Anything 6 in. or less shall be considered a spar, for which shall be paid	1.45
(Of which the cutter receives 35c. and the loader $1.10)	
When the spar runs at an angle there shall be paid additional, per yard	0.37
(Of which the cutter receives 9c. and the loader 28c.)	

(Jeffrey, Link-Belt, Morgan-Gardner or any other chain machine)

Clay veins 6 in. and less than 12 in	$2.68
(Of which the cutter receives 47c. and the loader $2.21)	
Anything 12 in. or over, per foot	2.68
(Of which the cutter receives 47c. and the loader $2.21)	
When clay veins run at an angle across the room, per yard	0.64
(Of which the cutter receives 9c. and the loader 55c.)	
Anything 6 in. or less shall be considered spar, for which shall be paid	1.31
(Of which the cutter receives 24c. and the loader $1.07)	
When the spar runs at an angle there shall be paid additional, per yard	0.31
(Of which the cutter receives 7c. and the loader 24c.)	

All prices for narrow work and dead work in the thin vein shall apply to similar work in the thick vein.

INSIDE DAY-WAGE SCALE

Motormen	$6.10
Motormen helpers (by whatever name known), skilled wiremen in charge of work, track layers, bottom cagers, drivers, trip riders, water and machine haulers and timbermen, where such are employed	6.00
Pipemen for compressed-air plants	5.92
Tracklayer's helpers, wiremen's helpers and unclassified inside day labor	5.75
Trappers	3.18

OUTSIDE DAY-WAGE SCALE

Ram operators	$5.60	Pushers	$5.18
Dumpers	5.42	Car cleaners	5.10
Trimmers	5.36		

Union Tries to Work Its Way Into Thacker Field of West Virginia

TROUBLE seems to be brewing in the Thacker field of West Virginia, where an apparently determined effort is being made by the miners to organize. So far the miners do not seem to have made much headway, as the operators are opposed to the organization of the mines in Mingo county and will not, it is believed, submit to the organization of the mines without a struggle.

Would Not Load Railroad Cars Placed by Non-Union Brakemen

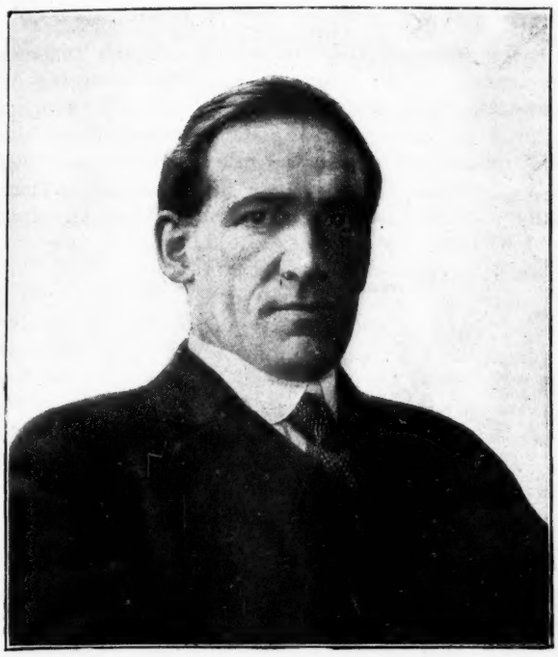
ALLEGING that non-union brakemen helped to switch empty coal cars into a railroad siding, 350 coal mine workers employed by the Kirk Dunn Coal Co., at West Point, near East Liverpool, Ohio, went on strike May 3, the strike to last till union brakemen provided other cars for the work.

To Make Survey of Tennessee Coal Beds

DAVID WHITE, Chief Geologist of the U. S. Geological Survey, is making a tour of Tennessee in company with State Geologist W. A. Nelson and Dr. L. C. Glenn, of Vanderbilt University, for the purpose of correlating the coal beds of the state.

Dr. F. G. Cottrell Will Head Mines Bureau

Well-Known Chemist and Metallurgist Selected to Succeed Dr. Van H. Manning—Inventor of the Cottrell Process of Electrical Precipitation of Fumes Has Been with the Bureau Since 1911



DR. FREDERICK G. COTTRELL unquestionably will succeed Dr. Van H. Manning as director of the Bureau of Mines. He was recommended for the place by the Secretary of the Interior. The President acted favorably on the recommendation almost immediately, and sent the nomination to the Senate. Confirmation has been delayed because no executive sessions of the Senate have been held. It is known definitely that there will be no objections to his confirmation.

The selection of an assistant director is now being considered. Since it is understood that Dr. Cottrell is not disposed to retain the office for more than a limited period, great care is being exercised in the selection of an assistant director, who would be the logical successor to the directorship.

Despite the fact that Dr. Cottrell is not a mining engineer, his appointment has general approval in the mining industry, although some continue to insist that the place should go to a mining engineer. Dr. Cottrell has been closely associated with mining problems for many years, however.

Dr. Cottrell was born in Oakland, Cal., Jan. 10, 1877. He attended school in Oakland and was matriculated at the University of California in 1893. As a university student he gave especial attention to science, particularly chemistry. After graduation in 1896, with the degree of Bachelor of Science, he was a Le Conte fellow at the university in 1896-7 and taught chemistry at the Oakland High School in 1897-1900. Then he went to Europe, where in 1901 and 1902 he studied at the University of Berlin and the University of Leipzig, receiving from the latter the degrees of Master of Arts and Doctor of Philosophy, 1902.

On his return to this country in 1902 he was appointed instructor in physical chemistry at the University of California, and in 1906 was appointed assistant professor, holding this position until 1911. While at the university Dr. Cottrell's chief contributions to science were researches relating to the electrical precipitation of fume and fine particles suspended in the gases of smelter, blast furnace or cement works flues, and he finally evolved what is known as the Cottrell process for this purpose. This invention was first utilized at the Selby smelter in California for removing fumes from the waste gases of a sulphuric-acid plant at the smelter, thereby abating a nuisance that threatened to necessitate shutting down the works.

Subsequently this electrical precipitation process was installed at other smelters to remove fume and solid particles containd in the escaping gases, and it was successfully used also at cement plants, notably near Riverside, Cal., to prevent the dust from calcining kilns from damaging nearby orange groves and vegetation. Today the Cottrell process of fume and dust removal is in worldwide use, and is recovering materials valued at many thousands of dollars heretofore wasted.

One of the latest installations is at a large smelting plant in Japan, while the largest installation is at the Anaconda smelter, Anaconda, Mont. Dr. Cottrell in a desire to encourage scientific research turned over his extensive patent rights to a non-dividend paying corporation, known at the Research Corporation, a body formed for that purpose. A fundamental provision in the incorporation is that all net profits shall be devoted to the interests of scientific research.

In 1911, when Dr. J. A. Holmes, the first director of the Bureau of Mines, was serving as a member of commissions appointed by the Government to study alleged damages from smoke and fumes from the Selby and the Anaconda smelters, and the Bureau of Mines was investigating at length the smelter-smoke problem, Dr. Cottrell, because of his scientific attainments and his special knowledge of metallurgical problems, was appointed chief physical chemist in the bureau. In 1914 he was appointed chief chemist; in 1916, chief metallurgist, and in 1919, assistant director.

Aside from his work on smelter smoke Dr. Cottrell has been deeply interested in and intimately connected with work on the separation and purification of gases by liquefaction and fractional distillation. During the world war and subsequently thereto the development of the Norton or Bureau of Mines process for the recovery of helium from natural gas has been his special care, and it was chiefly through his efforts that a plant for recovering helium—a rare non-inflammable gas—on a large scale for military aeronautics was erected near Petrolia, Texas.

Dr. Cottrell is a member of the American Chemical Society, Mining and Metallurgical Society of America, the American Electro-chemical Society and the American Institute of Mining and Metallurgical Engineers. He was awarded the Perkin medal by the New York Section

of the Society of Chemical Industry in 1919 in recognition of his work on electrical precipitation.

Dr. Cottrell is the holder of the following United States patents:

Patent	Patent No.	Date
Manufacture of Sulphuric Acid	866,843	Sept. 24, 1907
Apparatus for Separating Sulphuric Acid	866,844	Sept. 24, 1907
Art of Separating Suspended Particles from Gaseous Bodies	895,729	Aug. 11, 1908
Effecting Interchange of Electric Charges Between Solid Conductors and Gases	945,917	Jan. 11, 1910
*Process for Separating and Collecting Particles of One Liquid Suspended in Another Liquid	987,114	March 21, 1911
*Separating and Collecting Particles of One Liquid Suspended in Another Liquid (Co-patentee with James Buckner Speed)	987,115	March 21, 1911
*Apparatus for Separating and Collecting Particles of one Liquid Suspended in Another Liquid. (Co-patentee with James Buckner Speed)	987,116	March 21, 1911
*Separating and Collecting Particles of One Liquid Suspended in Another Liquid (Co-patentee with Allen Cheever Wright)	987,117	March 21, 1911
Purification of Gases	1,016,476	Feb. 6, 1912
Apparatus for Separation of Suspended Particles, etc. (Co-patentee with Burns)	1,035,422	Aug. 13, 1912
Filtering Media, Etc.	1,060,065	Apr. 29, 1913
Improvement in Method of Discharging Electricity into Gases	1,067,974	July 22, 1913
Synchronous Electrical Contact-Maker	1,143,175	June 15, 1915

*Owned and controlled by Petroleum Rectifying Co., 350 California St., San Francisco, Cal. (patents deal primarily with oil de-emulsifications.)

British Columbia Coal Production

Coal production of British Columbia collieries for the month of March follows:

	Tons
CROW'S NEST PASS	
Crow's Nest Pass Coal Co., Coal Creek	27,090
Crow's Nest Pass Coal Co., Michel	21,529
Corbin Coal & Coke Co., Corbin	10,116
Total	58,735
NICOLA-PRINCETON	
Fleming Coal Co., Merritt	3,344
Coalmont Collieries, Coalmont	81
Princeton Coal Co., Princeton	993
Total	4,418
VANCOUVER ISLAND	
Canadian Western Fuel Co., Nanaimo	55,769
Canadian Collieries (D) Ltd., Comox	32,587
Canadian Collieries (D) Ltd., Extension	19,277
Canadian Collieries (D) Ltd., South Wellington	7,219
Pacific Coast Coal Mines, Ltd., South Wellington	10,338
Nanoose Collieries, Nanoose Bay	1,849
Granby Consolidated Mng. & Smltg. Co., Cassidy	17,566
Total	144,595
NORTHERN BRITISH COLUMBIA	
Telkwa Collieries, near Prince Rupert	200

Mark W. Potter Nominated to Interstate Commerce Commission

PRESIDENT WILSON has nominted Mark W. Potter, New York lawyer and railroad man, to the Interstate Commerce Commission. Mr. Potter fills the last of three vacancies that existed for several weeks, two other nominations having been made a few days ago.

Mark Winslow Potter is a member of the New York law firm of Hornblower, Miller, Garrison & Potter. He was born in Kaneville, Ill., 54 years ago, and was graduated from New York University in 1888, entering law practice here.

He is president of the Carolina, Clinchfield & Ohio Railway, and of the Cumberland Corporation. He is a member of the city, county and State bar associations.

Ruhr Coal Field Has Housing for 560,077

AN investigation has recently been carried out, *The Colliery Guardian* states, covering 95 per cent of the mines in the basin and 393,067 workmen, into the state of housing in the Ruhr district. According to the report, there were 36,592 dwellings available for the accommodation of these workmen, excluding houses for officials.

Of the total, 35,184, containing 106,889 tenements, were owned by the mines, and 1,408, containing 5,937 tenements, were rented. These 112,826 tenements sheltered on June 1, 1919, 560,077 persons, of whom 151,850 were workers in the mines, comprising 138,042 heads of family or boys and 13,808 lodgers. The following table of housing statistics for the Ruhr district is not without interest:

	Average monthly rent (marks).				
Containing—	Miners	Other householders	No. of tenements	No. of residents	No. of persons per room
One room	5.54	9.49	65	76	1.16
Two rooms	10.47	19.15	5,673	18,613	1.64
Three rooms	14.51	26.59	40,523	176,611	1.45
Four rooms	17.61	35.42	57,671	306,345	1.33
Five rooms	21.09	45.24	6,850	43,975	1.28
Six rooms	24.87	56.83	2,044	14,459	1.18

In addition, the mines owned at the same date 134 hotels, accommodating 7,401 workmen, in which room was available for 12,000 persons beyond this figure.

Gompers and Allen to Debate Kansas Industrial Court on May 28

GOVERNOR HENRY J. ALLEN of Kansas and Samuel Gompers, president of the American Federation of Labor, will meet May 28 to debate the Kansas Industrial Relations Court. The debate will be held in Carnegie Hall, New York.

Under the rules prescribed, each debater is privileged to appoint a committee of fifty to act as judges.

Previous to accepting the challenge of Mr. Gompers, Governor Allen is reported to have declined to meet Clarence Darrow, the well-known lawyer, in a discussion of the new industrial tribunal.

Railroad Managers Plan Better Use of Cars To Avert Coal Shortage

OHIO railroad managers are taking initial steps to avert another coal shortage next winter. They have asked concerted action on the part of railroads in the territory east of the Rocky Mountains for the conservation of open-top cars for the carrying of coal. It is asserted that unless there is some definite action taken, there will be a worse coal shortage next winter than was ever known, due to the switchmen's strike and other causes which have held up production to a large degree.

In a general way the plan is to limit the use of open-top cars until coal mines are supplied 100 per cent. Eastern railroad officials are quoted as being favorable to this plan and it is planned to have a special committee of railroad officials to confer with the Interstate Commerce Commission, in order to get certain rules promulgated to bring about the conservation of open-top cars for coal movement exclusively.

Discussion by Readers

Edited by
James T. Beard

Let Us Deal Fairly and Squarely With The Miner

Not long since I read the letter of Sim C. Reynolds, urging the fair and square treatment of miners, and was deeply interested in his presentation of a few of the difficulties that obstruct the path of the coal miner, *Coal Age*, Mar 18, p. 553. Let me say that this question can be discussed from many angles and I will refer briefly to one of them.

It is quite true, as Mr. Reynolds remarks, that miners are often radical and irrational in their demands, but, as he frankly admits, employers often show the same unreasonableness in their attitude toward the miner.

Not long since, the miners through their officials in the Union asked for an increase of 60 per cent in their pay and shorter hours. People in general expressed their disapproval of these demands. We were told that the miner always demands more than he expects to get. It was argued that the cost of living has not increased in proportion to the increase asked by the miner. These statements, however, come very largely from people living outside of mining districts. Their remarks might be true if the conditions in mining communities were the same as in large towns. It is safe to say that if such was the case the majority of the miners would be satisfied with a smaller increase in their earnings.

To my knowledge, the company where I am employed are trying to deal fairly with their employees and, at the present time, are working on a plan that will greatly relieve the hardships of their workers. Realizing from his own experience, the difficulties that beset the miner's path, Mr. Reynolds shows by his remarks that his heart is with the miner in everything that is right, which is true of every fair-minded person.

Profiteering Is Common in Isolated Mining Camps

Just here, let me refer to a conversation that I overheard and which took place between a triprider and the owner of a small grocery store, in a mining town. They were speaking of the profiteering of merchants and other dealers in supplies. The triprider asked why it was that he could save $20 by making his purchases in adjoining towns. He stated that he could buy the same goods for $30, in another town, which would cost him $50 at home.

The reply of the storekeeper was to the effect that if a person came into his store from out of town and offered him 17c. for an article costing between 15c. and 16c., he would not refuse the offer, knowing that he would lose the money if he did not accept the price named by the purchaser. At the same time, he did not hesitate to say that he would charge a regular customer 25c. for the same article, claiming that the people living in the town had to have the stuff regardless of the price asked.

Fish that cost this storekeeper 15c. per pound delivered, he would sell for 35c. and 38c. a lb.; and oysters that cost $2 a gallon sold for $1 a quart. Conditions such as these are not known or realized by people living in other communities; and the miner, isolated as he is from the great world outside, is expected to accept these hardships and burdens as a part of his lot. There is plenty of opportunity for our government to investigate profiteering in small mining districts and isolated communities where there is little or no competition in trade.

———, Pa. SUFFERER.

Short-Circuiting or Obstructing the Air Current in Fan Ventilation

Some time ago, I recall that, in making an air-inspection report on a mine in Pennsylvania, at a time when air measurements and water-gage readings were being taken, the following test was made in short-circuiting the air: The fan at this mine was of steel construction and exhausting 240,000 cu.ft. of air per minute from the mine under a 42-in. water gage.

In order to short-circuit the air a 5 x 7 ft. trapdoor was opened, at approximately 300 ft. from the upcast shaft, which had an area of only about 80 sq.ft. When this door was opened the air current made a circuit of not more than 1,000 ft., taking into consideration both the intake and the fan shafts, which were each 180 ft. in depth.

Effect of Contracted Area of the Upcast Shaft

After making this short-circuit, we found that the water gage did not show any appreciable change. The water gage was, I believe, of the Bristol recording type. It might be of interest to say, here, that practically one-half of the mine water gage was created by the air going up the small fan shaft.

At a distance of 250 ft. from the fan-shaft bottom, when the air was going around through the mine, the water gage was 1.5 in., while it showed only 0.5 in. when we short-circuited the air. The fan was belt-driven, by an alternating-current induction motor.

As to an obstruction in the air-course, I will relate an actual incident that occurred in West Virginia, at a mine over which I had charge. The fan was a Lepley reversible, 23 x 8 ft. and used as a blower. It was producing 125,000 cu.ft. of air per minute, with a 1.4 in. water gage. This fan was direct connected to a steam engine known as the Lepley type of engine.

One morning at 2:30 a.m. the night mine foreman woke me, saying that something unusual had happened to the air current. In fact, instead of the air going up the "B" shaft, it was, if anything, coming down that shaft. In other words, the air current was almost at a standstill. I said, "Did you look at the fan?" He replied, "Yes, and its making the usual number of

revolutions, and both the Bristol and the ordinary water gage register 1.4 in." When asked if the fan wheel was turning, as well as the fan shaft, he replied, "Yes."

Rising, I went down to the fan-house and found all of his statements were true. From there, we got on the cage and went to the foot of the downcast shaft and found the opening at the foot of that shaft frozen shut with soft ice, so that the area of the opening was not more than one-half a square foot, if it was that. After we broke down the ice, the air circulated as usual with the regular quantity passing and with the usual 1.4 in. of water gage.

The following day the night mine foreman, whom I wish to say was not only a good technical man, but an A No. 1 practical man, said to me, "Why didn't either one of those water gages show us that the shaft was frozen shut and the air could not get down?" This man is at present a state mine inspector, which shows further he was and is a man of exceptional mining knowledge and ability. MINE BOSS.

Greensburg, Pa.

Tamping a Charge of Dynamite Is the Safest Method

This subject has been running in my head since the discussion began. It has taken me back some 35 or 40 years, when I used to stick the jumper or tamping bar into the hole, to act as stemming; then, light the squib in the blasting barrel and rush for safety, crouching behind a mine car that I kept standing at what seemed to be a safe distance away.

I practiced this daredevil scheme until one time the shot blew the blasting barrel my way, with the result that it was imbedded in the end of the car and crumpled up under the force of its impact. Then and there I quit that game and followed a safer method in my blasting operations.

BETTER RESULTS OBTAINED BY GOOD TAMPING

Without getting into any controversy with others of a different faith, I claim that far better results are obtained when a dynamite charge is tamped fully to the mouth of the hole. Having used, I might say, thousands of pounds of dynamite ranging from a 40 to an 85 per cent grade, my belief in well tamped shots is based on actual experience, which is always the best teacher.

A few years ago, when sinking a shaft and drilling what are termed "wallside" holes, which are holes driven straight down so close to the side of the shaft that the fingers would just clear when handling the drill, I got good results, with 85 per cent dynamite (gelatin), in holes where the water would shoot from the gullets or cracks in the strata to a height of 8 or 10 ft. when the blast went off. The charge was carefully forced down to the bottom of the hole below the gullet and the water made an air-tight stemming.

However, today, in shooting coal, particularly with permissible explosives, which are considerably slower than dynamite, and when the market demands lump coal, all holes should be stemmed as hard as reasonable, in the judgment of the shotfirer.

Today, in company with a mine inspector, I went into a place that was already shot down. A shot had been placed on each side of the breast, which under ordinary conditions would do good work. We noticed that the right-side hole was still plainly visible, the shot having only cracked the coal downward. There was no coloring of clay on the sides of the hole; but, on the contrary, it was blue black, which indicated that the shot had spent most of its force in the direction of the mouth of the hole. We use AA Aetna powder.

INSUFFICIENT STEMMING CAUSES A BLOWNOUT SHOT

After examining the place, our conclusion was that the hole had not been properly stemmed. However, the place being very wet, it is possible that the clay used in stemming was in too moist a condition to offer much resistance, with the result that the shot blew its tamping. This incident again leads us to think that all holes charged with any grade of permissible explosive must be securely tamped from the charge to the mouth of the hole. Reflecting, for a moment, on what a blownout shot has done and what it is liable to do again and the serious consequences that are sure to follow, cannot fail to impress us with the necessity of good solid tamping.

In the interest of safe mining, let us insist on the employment of honest shotfirers who will listen to admonition and regard their own safety. If we err let it be on the right side; but let us not invite trouble by doing what is liable at any time to produce another Naomi explosion as the result of such unsafe practices in blasting.

Our local and general safety committees will, I am sure, bear me out in insisting that all shotholes must be fully tamped. The manufacturers of explosives ask the same; and why should not we, who are in direct contact with and in control of the work, use every precaution to insure safety, instead of giving way to the whims of a few shotfirers who think they have too much work to do to permit of more than half-tamping the holes. R. W. LIGHTBURN.

Perryopolis, Pa.

Mystery In Mine Explosions Results from Our Lack of Knowledge

Reading the several letters discussing the mysterious explosion that occurred in the Buffalo mine, in Ohio, the account of which was given in *Coal Age*, Jan. 22, p. 197, impresses even the miner with the thought that he is continually surrounded by hidden dangers of which he has little knowledge. In recent years there have been many occurrences in mines that have been placed in the catalog of "unaccountable accidents."

While we frequently fail to account satisfactorily for these occurrences and are forced to the conclusion that the science of mining has not made the progress that we could wish, we have escaped from that atmosphere of mystery that surrounded our forefathers, who were wont to explain such accidents as the work of spooks, fairies or evil demons. Today we do not accept such theories, even though we fail to grasp the meaning of the many expert opinions that are given in explanation of the occurrence.

WE NEED TO STUDY CAREFULLY ALL THE CONDITIONS

The fact that the Buffalo mine had been examined and reported "safe" by the fireboss, only a short time before the explosion occurred, leads one to believe that either there was a great mystery in the affair or the fireboss failed to report the true condition of the place. In

our practical experience in coal mining, we often meet with peculiar conditions that require a close study of the geology of coal and its formation with the occlusion of gas in the strata, which makes possible the sudden outbursts of gas that occur, from time to time, in our mines. Without the knowledge derived from this study, occurrences such as these are a mystery.

I recall a mysterious explosion that occurred some years ago in a mine in England, at a time when no one was in the mine. Different theories were advanced as to the cause, one being that gas had been ignited by sparks struck by a hard flinty rock falling from the roof upon a similarly hard substance. There were those who scoffed at this idea, as men are generally slow to accept a new principle or theory.

In recent years, the extensive use of natural gas for industrial purposes, made possible through deep boring, shows the existence of immense quantities of gas stored beneath the earth's surface. Our mining experience tells us that this gas finds its way through numerous faults and slips in the strata and makes its appearance in the mine workings, often quite suddenly and when we least expect. This proves the possibility of accumulations of gas forming at any time in a mine supposed to be free from gas and safe. Reports of explosions frequently add that "the mine was never known to generate gas."

In reference to gas being generated in the floor of a mine, many are adverse to such an opinion. That was my condition a few years ago; but, on one occasion when making my rounds of the mine where I was employed and where gas was rarely seen, I had just passed through a room where the coal was being cut by machines, when the men called me back to show me that thy had lit some gas given off in the mining at the bottom of the seam. It was a new experience to them and to myself as well.

There being no old works near the place led me to study the situation, and my conclusion has been that gas often issues from crevices in the floor and from faults in the formation, which may reasonably be expected, instead of supposing the gas must always come from the roof.

Danger Lurks in the Dust-Laden Air in Machine Mining and in Outbursts of Gas

We all know that fine coal dust is a great source of danger in mines, and that the danger is increased when gas is present. Anyone who has gone into a room where a machine was at work mining the coal will testify as to the density of the clouds of dust floating in the air. I have even known it to sparkle on the lamps. This condition would make a place dangerous where the amount of gas present was not sufficient to cause alarm.

Speaking of sudden outbursts of gas, there is an account, in Pameley's book on mining, of a mine where gas accumulated during the night to such an extent as to fill the shaft. The gas was ignited in the engine room at the shafthead and a volume of flame shot up 150 ft. into the air. Fortunately, no one was in the mine at the time.

To sum up, my conclusion is that mine workings are subject to such outflows of gas from great reservoirs beneath the strata. This fact, together with the possibility of the gas being ignited by the light of an unsuspecting miner, or the breaking of an incandescent lamp bulb, or other cause, makes it necessary to be always on the watch and observe every possible precaution to avoid danger.

W. M. Chambers.

Staunton, Ill.

Superintendent's Plans Disrupted by a Worker's Request for a Change

The question of shifting a worker is a problem with which mine officials are frequently confronted and one that often proves very annoying. About the time a superintendent has completed his organization and is beginning to think that everything will move along smoothly, he is suddenly brought face to face with a request from a man, holding a subordinate but important position, who asks to be transferred to another place. The change is not often easily adjusted.

How often has a mine official gone from his office to his home and perhaps to bed; and, before closing his eyes for the night, has gone over the whole situation and completed his plans by which he hoped to strengthen the whole organization. Every man on the force is known to him; he has studied each man's capability and fitness for the position contemplated. The arrangement is made in the best interests of all concerned. Then, before this could be put into effect, in comes some one with a special request for a position other than what the superintendent has planned for him.

The change will disrupt his plans and necessitate making other changes not in the program. Some one asks, "Should the superintendent curse and swear?" There are times, no doubt, when something should be said; and this may be true in the case cited in the inquiry that started this discussion, *Coal Age*, Feb. 12, p. 327. No doubt, the superintendent in that instance, thought he had this particular man placed in a position best suited to him and where he could use his knowledge and experience, as an electrician, to the best advantage. But, here, the mine electrician has offered the man a job of bonding rails in the mine, with more pay than what he was getting at the substation.

There Are Frequently Good Reasons for a Worker Seeking a Change

The instance cited, reminds me of a restless fellow whom I happen to know. He is a good fellow; will do almost anything; but, like the Irishman's flea, when you think you have him located, he is gone. The case in hand may be a similar one. In asking for the change desired, the man may have been wholly within his rights. It is quite clear that he has not stated all his reasons, which if we knew might alter our judgment. The work at the substation, while tiresome to an active man, would suit an older man better.

However, the superintendent showed a weakness in that he did not control his feelings and restrain his temper. If one must swear it is better to wait until he is alone by himself. Then, if he is still of the same mind he can let it out and it will do no one harm but himself. How can a man control a body of men if he fails to control himself?

"Millions for defense; not one cent for tribute" was the terse reply of our representative to the threats of the agents of France (1798). There are times when an emphatic answer must be given; but, under no consideration, should a man lose control of himself, whatever his provocation.

In my earlier experience, I have worked for mine officials who seemed to lack the least sense of courtesy. Such was their manner that I would shudder to see them coming, fearing a storm of abuse and fault-finding. As mine officials we need to extend the same courtesy and respect to our employees that we expect to receive from them, thus setting them the example.

Osceola Mills, Pa. S. D. HAINLEY.

Build an Up-To-Date Plant and Electrify the Mine

The inquiry of Arthur L. Sheldon of Charleston, W. Va., which appeared in *Coal Age*, Feb. 26, p. 419, relative to the best and cheapest method of working three seams of coal, has naturally aroused an interesting and profitable discussion. Different plans have already been submitted and others will be forthcoming from which Mr. Sheldon will be able to extract many excellent points that will be helpful.

The first consideration is the statement that a daily output of 1,000 tons is desired, and we may infer from this that the company have a sufficient acreage to maintain this tonnage for many years. In that case it would be desirable to build an efficient plant second to none in the state. In the plans I am about to submit, the cost of installation must not be considered as excessive, inasmuch as the cost of production and upkeep, per ton of coal mined, will be materially lessened as advancement is made in the mine, from year to year. It should be understood that I am writing from a general standpoint of economy and safety, and do not forget the increase that will be effected in time.

MAKE AMPLE PROVISION FOR THE FUTURE IN THE LAYING OUT OF THE MINE

The three seams lie at depths, approximating 50, 100 and 160 feet, respectively, below the river bottom. They will be known, in what follows, as Seams Nos. 1, 2 and 3, respectively. Mr. Sheldon is right in proposing to sink two shafts, 300 feet apart, as required by law; but I would suggest that, as soon as the location for the plant has been determined, he proceed to open a slope to No. 1 seam. This should be done as rapidly as possible while erecting a temporary tipple that will later form a part of the permanent equipment. This being accomplished, work No. 1 seam as rapidly as possible and market the coal, thereby gaining the advantage of an income to help offset the first-cost of an up-to-date plant.

It is now time to sink the two shafts to No. 2 seam; and when Seam No. 1 is reached in sinking connect the shafts at once with that seam, for safety and air conditions. By the time Seam No. 2 is reached by the shafts, Seam No. 1 will be well advanced, and underground conditions, as to water, haulage, roof and bottom, can be studied to advantage for the purpose of improving the plans for laying out the mine in No. 2 seam. Any slight errors that are apt to occur can be thus eliminated.

PLAN FOR SAFETY AND ECONOMY IN THE EQUIPMENT

Electrify the plant in every phase of economy, safety and convenience. Build a steel headframe and a concrete storage bin, having a capacity of from 700 to 1,000 tons and divide it into at least two connecting compartments with a fly-pan just below the receiving chute, so arranged that the coal from either seam can be separated if necessary because of market conditions. This arrangement will naturally mean self-dumping cages. My advice is to equip the plant with electric hoists.

By the time the shafts to No. 2 seam are completed and coal is being brought to the surface, the development in Seam No. 1 will determine whether or not it is advisable to bring No. 1 coal up the shaft or to continue to haul it up the slope. In any event, however, the temporary tipple at Seam No. 1 should be so constructed that any slate and rock from the three seams that must be brought to the surface can be dumped over a pan, dropped for that purpose, and allowed to slide down a chute into a lorry or car waiting to convey it to the rockdump. The temporary tipple should be erected alongside of the storage bin so that the one crew can attend to all.

The mine cars should be so constructed, as to size and durability, that with slight changes they can be adapted for use in No. 3 seam, later. Equip each seam with storage-battery locomotives and charging stations. Weigh the coal on the inside. It is understood that the equipment used in the first two seams can be used, later, in the lower seam, at least in a general way.

COMPLETE EXTRACTION OF COAL DEPENDS ON ORDER OF WORKING THE SEAMS

Working from the standpoint of a complete recovery of coal, it will be advisable to work No. 1 seam in advance of No. 2, and No. 2 in advance of No. 3. But, to maintain the desired tonnage (1,000 tons per day), it would seem that the coal from No. 1 or at the most some from No. 2 would be sufficient. This would concentrate the working forces and not demand such an elaborate system of upkeep on each seam.

About the time No. 1 seam is exhausted, the shafts should be sunk to No. 3 and that seam made ready for production to offset the loss of No. 1. The material taken from No. 1 can generally be used in No. 3 seam. Also, as the biggest operation, in later years, will be from Seam No. 3, the material from No. 2 can be transferred when that seam is worked out.

It should be born in mind that similar working plans should be used in all these seams. The pillars left in the first two seams should be directly over those in the lower seam, and when pillars are to be drawn, particular attention should be given to draw the upper ones first. More especially is this true if any working places have been driven under the river. Such workings should never be attempted if possible to avoid them.

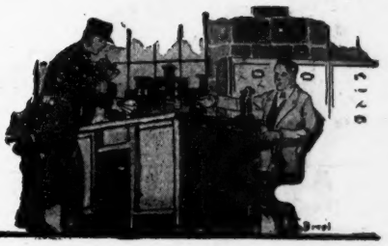
It is difficult to determine the best plan to adopt in working these seams. Mr. Sheldon states that the mountain rises 1,000 ft. above the railroad; and, considering the general geological conditions, we might assume that the top over the coal would be fairly good. But, the working of Seam No. 1 in advance of the lower ones will afford an advantage in determining the right procedure for the other two. I should think, moreover, that the core taken from the two test holes and the knowledge at hand as to acreage and possibilities would be of considerable help in determining the number and width of the entries, and the width of the pillars and rooms, in order to secure the most economical and safe system of working these three overlying seams.

Thomas, W. Va. BEN.

Inquiries of General Interest

Answered by

James T. Beard



Removing Gas From Rise Workings

A question asked at a recent mine foremen's examination was brought up a little later at a night school where I attend, with the result that no satisfactory conclusion was reached. The question is as follows:

Suppose you had charge of a mine where there was a gob area extending 200 ft. to the rise of the ventilating shaft and, during periods of falling barometer, gas issued from the gob in such quantities as to foul the air in all the adjacent upgrade workings. Suppose, also, that the mine's resistance is so low that a water gage of one-half inch produces sufficient ventilation for the rest of the mine; but this pressure is not sufficient to drive the gas from the rise workings. The question is, what can be done to remove the gas on the rise side of the mine, without increasing the quantity of air circulating in the other workings? A NEWBURY.

Nanaimo, B. C., Canada.

This is an instance of the lack of the proper regulation of the air passing into the mine. The air current should be split at the foot of the downcast shaft. A regulator should be placed, at that point, on the aircourse leading to the dip workings. The opening in this regulator should be so adjusted as to increase the pressure leading to the rise side of the mine sufficiently to produce the desired results.

The quantity of air passing into the dip workings is controlled by the adjustment of the regulator to suit the conditions. It is simply a matter of the proper distribution of the air entering the mine and involves supplying a sufficient ventilating power to produce the required pressure in the rise workings. The ventilating pressure in the main drift will, of course, be raised by the presence of the regulator at the foot of the shaft.

Shortening a Hoisting Rope

A question that has caused considerable argument hereabout, is one relating to the shortening of a hoisting rope on one side of a double-compartment shaft. For the purpose of securing a better grade and expediting the movement of the cars on the shaft bottom, it was proposed to raise the sump logs on one side of the shaft 8 in., and to shorten the hoisting rope on that side the same amount. Formerly, the sump logs on both sides of the shaft were at the same level and the two ropes, which were attached to the same drum, were of equal length.

It was argued that when the cage attached to the long rope is at the upper landing, the other cage will rest on the sump logs, after the rope has been shortened and the logs raised 8 inches.

In discussing this question, I contended that when the two ropes are made of unequal length the ascending cage attached to the shorter rope will reach the upper landing when the descending cage on the long rope is within 8 in. of the sump logs on that side of the shaft.

Or, again, even assuming that one of the ropes is changed on the drum, so as to permit the cage attached to the long rope to rest on the bottom when the other cage is at the upper landing, I claim that the descending cage attached to the short rope, would then reach the sump logs, raised 8 in., before the other cage has risen to the upper landing.

Some of the men think that it will make no difference, and that we can hoist just the same when one rope is shorter than the other, provided the sump logs are raised so as to correspond to the shortening of the rope. Please answer this question in the columns of *Coal Age* and settle our dispute. LARRY MCGONNIGAL,

Toluca, Illinois. Mine Mgr.

Assuming that the two ropes, in a double-compartment shaft, are attached to the same drum and the diameter of the drum is the same throughout, it follows that any given number of turns or revolutions of the drum will raise one cage the same distance that the other is lowered. By raising the sump logs 8 in. on one side of the shaft, the depth of hoist, on that side, is shortened the same amount. As a result, the hoist from those sump logs to the upper landing, will be completed when the drop on the other side of the shaft lacks 8 in. of completion. This is true which ever cage is being hoisted or lowered, the shorter side will complete the trip between the upper and lower landings when the longer side lacks 8 in. of reaching its level.

Economy in the Firing and Care of Steam Boilers

How is it possible to fire steam boilers to get the best results, and what care is needed in their use?

La Salle, Ill. ASST. FIREMAN.

Steam boilers should always be fired at regular short intervals, by placing the fresh coal at the front of the fire and allowing it to remain there until it has become partly ignited when it is spread quickly and evenly over the fire. This process is called the "coking method" of firing. It has the advantage of maintaining a constant and uniform heat beneath the boiler which is very important in the production of steam.

In order to secure the best results, steam boilers require thorough cleaning at regular intervals, when any scale accumulated on the inner surface of the boiler and tubes must be removed. In order to prevent, as far as possible, the formation of scale in the boiler, the purest possible feedwater should be used. When feedwater contains lime, magnesia, or other impurities, in the form of carbonates or sulphates, some reliable method of treatment must be adopted to remove these impurities before the water is introduced into the boiler. The boiler should also be partly blown off at frequent regular intervals to remove any accumulation of sediment and to keep the boiler clear.

Examination Questions

Answered by

James T. Beard

Miscellaneous Questions

(Answered by Request.)

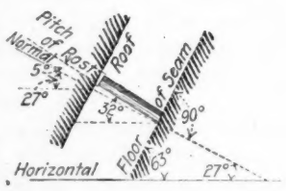
Ques.—What causes a dust explosion; and what method would you adopt to prevent the occurrence of such an explosion?

Ans.—A dust explosion results from the ignition of a cloud of dust, which has been thrown into the air by the concussion produced by a windy or a blownout shot, or by the disturbance incident to the various operations going on in the mine. This is liable to occur wherever any undue accumulations of fine coal or dust is permitted in the working places and on the roads and travelingways in the mine.

The best means of preventing dust explosions is to adopt plans that will avoid undue accumulations of dust at the working faces and on the roads. Strict rules and regulations should be enforced regarding the blasting of coal, so as to reduce to a minimum the production of fine coal and dust. The working face must be kept clean and all "fines" loaded out with the coal. Dustproof cars should be used and these should not be loaded so as to cause lumps of coal to fall from the cars in transit. All roads and travelingways should be thoroughly cleaned at regular intervals. It may be necessary to install an effective sprinkling system in the mine. At the working face, a soft friable coal should never be blasted off the solid; and every shot should be well mined so that the charge can properly perform its work.

Ques.—The center props, in a slope of 63 deg. pitch, are set 5 deg. up the pitch. What is the pitch of the prop?

Ans.—A slope pitching 63 deg. makes that angle with the horizontal and, as shown in the accompanying figure, a normal line in this seam will make an angle of 27 deg. with the horizontal. Then, since the post is "underset" 5 deg., the pitch of the post, or the angle it makes with the horizontal, is 27 + 5 = 32 deg., as indicated in the figure.



Ques.—Give the principal causes of personal accidents in mines.

Ans.—The chief causes of personal accidents are the following: Failure to examine one's working place and properly secure the roof and coal and reset any discharged timbers, before proceeding to work; lack of judgment and skill in the placing of shots, charging, tamping and firing of holes; carelessness and recklessness in the handling of powder when making up a cartridge; violation of mining laws or mine regulations and disobedience of orders; and, finally, undue haste and neglect to take necessary precautions and act on safety-first principles when at work at the face, or in going to and from work in the mine.

Ques.—In a certain mine, what should be the diameter of a 14-ft. collar beam if 6-in. timber is used where the collars are 8 ft. long?

Ans.—Assuming the unit load, or load per foot of length, of the collar is the same in each case, the diameter of the collar will vary as the cube root of the square of its length or the distance between notches. In other words, the cube of the diameter ratio is equal to the square of the length ratio. Therefore, calling the required diameter of the 14-ft. collar x, we have:

$$\left(\frac{x}{6}\right)^3 = \left(\frac{14}{8}\right)^2 = 1.75^2 = 3.0625$$

$$x = 6\sqrt[3]{3.0625} = 8.71, \text{ say } 9 \textit{ in.}$$

Ques.—Three airways are passing 100,000 cu.ft. of air per minute. Airway A is 5 x 6 ft., 14,000 ft. long; airway B is 6 x 6 ft., 17,000 ft. long; airway C is 5 x 7 ft., 3,000 ft. long. What volume of air will pass in each airway?

Ans.—The sectional areas, perimeters, and lengths of these airways are as follows:

$$A,\ a = 5 \times 6 = 30 \text{ sq.ft.};\ o = 2(5 + 6) = 22 \text{ ft.};\ l = 14{,}000\ ft.$$

$$B,\ a = 6 \times 6 = 36 \text{ sq.ft.};\ o = 2(6 + 6) = 24 \text{ ft.};\ l = 17{,}000\ ft.$$

$$C,\ a = 5 \times 7 = 35 \text{ sq.ft.};\ o = 2(5 + 7) = 24 \text{ ft.};\ l = 3{,}000\ ft.$$

The quantity of air passing in each airway, in natural division, is proportional to the pressure potential for that airway. Therefore, it is necessary to calculate the value of the potential for each split. The work is much simplified by taking the lowest relative values of the areas, perimeters and lengths. The areas are, as given, 30, 36, 35. The lowest relative perimeters are 11, 12, 12; and the lowest relative lengths, 14, 17, 3. The potential values for these three splits are as follows:

$$\text{A},\ X_a = a\sqrt{\frac{a}{lo}} = 30\sqrt{\frac{30}{14 \times 11}} = 30\sqrt{0.1948} = 13.24$$

$$\text{B},\ X_b = 36\sqrt{\frac{36}{17 \times 12}} = 36\sqrt{0.1765} = 15.12$$

$$\text{C},\ X_c = 35\sqrt{\frac{35}{3 \times 12}} = 35\sqrt{0.9723} = 34.51$$

Sum of potentials 62.87

The quantity of air passing in each split is then found as follows:

$$\text{A},\ Q_a = \frac{13.24}{62.87} \times 100{,}000 = 21{,}060\ \textit{cu.ft. per min.}$$

$$\text{B},\ Q_b = \frac{15.12}{62.87} \times 100{,}000 = 24{,}050\ \textit{cu.ft. per min.}$$

$$\text{C},\ Q_c = \frac{34.51}{62.87} \times 100{,}000 = 54{,}890\ \textit{cu.ft. per min.}$$

The Labor Situation

Edited by
R. Dawson Hall

Eastern Kentucky and Tennessee Agreement Made

A WAGE and working-condition agreement has been successfully negotiated in District 19, which includes parts of eastern Kentucky and Tennessee. The Harlan field of Kentucky is not included in the contract. This agreement gives the union recognition but does not provide a check-off, which has never yet been in effect in that district.

The 8-hour day is adopted; house rent is not to be raised more than 50c. per month and house coal is to be supplied at $2.50 per month per house. The tonnage rates are increased 24c. a ton for both pick and machine mining, while the rate for daymen is increased $1 per day, giving the following day-wage scale:

Machine runners	$5.40
Motormen, blacksmiths and drum men	5.00
Spike-team drivers and boss drivers, head trackmen, head timbermen, bratticemen, engineers and carpenters	4.84
Blacksmiths' helpers	4.64
Carpenters' helpers	4.60
Machine runners' helpers, couplers, single-mule drivers track helpers, wiremen and pipemen, pumpmen and timbermens' helpers	4.44
Unclassified inside labor, tippers and trimmers	4.20
Firemen	4.04
Teamsters and inexperienced coal loaders	3.80
Unclassified outside labor	3.72
Sand men, greasers and yard couplers	3.64
Trappers and boys	2.53

Nova Scotia Mine Troubles Still In an Unsettled State

GREAT dissatisfaction has been felt in Nova Scotia with the Patterson and MacKinnon awards, the latter having been accepted by the employees of the Dominion Coal Co., Ltd. At a mass meeting held in St. Mary's Hall, Sydney Mines, N. S., on Tuesday April 27, President Baxter and Board Member MacPhee were busy for three hours answering questions propounded by the many malcontents who had denounced the awards as being inadequate and unsatisfactory. The meeting filled the hall and flooded the sidewalk.

In the end the leaders won the day but they declared their intention to demand in the near future the increase of 27 per cent in contract rates and $1 per day to day men ("datal hands") that has been granted in the United States by the Bituminous Coal Commission. A motion was put to refer the matter back to the locals, but it was voted down and an amendment to accept the Patterson award carried by a large majority.

About May 1 the operators of the mines which are located at Joggins, Inverness and Little Bras d'Or agreed to meet the wage-scale committee of district 26, thus taking the initiative from the Dominion Coal Co., Ltd., the Nova Scotia Steel & Coal Co., Ltd. and the Acadia Coal Co., which, being the big companies of the province, usually lead the rest. Of course, nothing can be done till these larger companies also consent to meet the representatives of the district.

Nova Scotia mine workers have in recent months accepted membership in the United Mine Workers of America. Formerly they had their own provincial union. Since their amalgamation with the international body they have reacted immediately to all wage changes taking place in the United States.

Montana Completes Its Wage Scale

JOINT conferees of the Montana Coal Operators' Association and the United Mine Workers reached an agreement as to wages on April 21. It will be effective from March 31. The instrument gives the miners a 27-per cent increase and advances the day men a dollar a day. Boy workers will receive 53c. more for each day's work. Monthly men get $30 more per month based on a 30-day month. The increase for both pick and machine miners is 24c. per ton. Yardage and dead work are increased 20 per cent. House coal is raised from $3.20 per ton to $4.40, and powder is advanced 60c. per keg.

Would Fix Their Own Rate of Pay

SELF-DETERMINATION seems to be the slogan in the old mining village of Stoneboro, near Sharon, Pa., where 350 coal-mine workers want nine hours' pay for eight hours' work. These men apparently like the increases that were awarded by the Bituminous Coal Commission and accepted by the International Union, to which 60 per cent of the men belong, and by the operators in general and their own operators in particular. They like the increases but believe they could improve on them and in fact do 12.5 per cent better. So 350 mine workers were on April 2 engaged in a strike to enforce the nine-hour pay for the eight-hour day with the Bituminous Coal Commission's award in addition. The dissatisfaction appears likely to be enduring, for ten days earlier the men walked out to enforce the same demand, but they were ultimately induced to return.

Motormen Quit in Support of Discharged Fellow Workman

BECAUSE a motorman was discharged by the officials of the Delaware, Lackawanna & Western R.R. coal department at the Archbald colliery all the electric-locomotive drivers at the mine went on strike on April 28. The sanction of the union was not obtained for the strike.

Men in the anthracite region are now not indisposed to make trouble because they hope by such means to aid in a more rapid agreement of the scale sub-committee and one that will give the mine workers a larger increase in pay than negotiations will provide. Around Mahanoy City several are said to have laid down their tools already.

Wage-Scale Agreement for Central Pennsylvania

House Rent Unchanged Except Where Improvements Are Made—Allowance for Pushing Where Miner Pushes Both Ways—Coal To Be Charged at Last Government Price Plus 27 Per Cent Plus Cost of Delivery—Powder To Be Sold at Cost Including Handling, Transportation and Insurance

MANY details were omitted in the scale agreement of the central Pennsylvania district, No. 2, in last week's account and some errors were made in reporting the scale. It is here given in full:

This agreement, made April 26, 1920, by and between the Association of Bituminous Coal Operators of Central Pennsylvania, hereinafter called the operators, for and on behalf of each of its members, party of the first part, and the United Mine Workers of America of district No. 2, hereinafter called the mine workers, party of the second part.

Witnesseth, it is hereby agreed that this agreement shall take effect as of the date of April 1, 1920, and continue in force until April 1, 1922. Each of the parties agrees that, during the term of this agreement, the following scale of wages, rules and conditions shall be observed and govern at all collieries owned or controlled by the operators and wherein a majority of the employees are members of the mine workers.

TONNAGE WAGE SCALE

Pick mining, per gross ton	$1.2803
Pick mining, per net ton	1.1431
Machine loading, per gross ton	0.6656
Machine loading, per net ton	0.7729

Machine mining per ton (machine mining to cover cutting, scraping and loading on a tonnage basis) shall be advanced 26.88c. per gross ton or 24c. per net ton.

Advance Not To Be Computed on Bonus

Cutting and scraping by any other method than day or ton shall be advanced 27 per cent but this advance shall not be computed or applied on any part of the 5 per cent concession or bonus in the scale agreement of April 30, 1917.

Cutting and scraping per ton shall be advanced 5.11c. per gross ton or its equivalent 4.56c. per net ton.

All deadwork and yardage shall be advanced 20 per cent over prices in effect Oct. 31, 1919, provided that this advance shall not be computed or applied on any part of the 5 per cent concession or bonus in the scale agreement of April 30, 1917.

It is hereby distinctly understood and agreed that all of the hereinbefore-mentioned rates have included therein a 5 per cent bonus or concession granted on the 1916 scale prices as specifically set forth in the supplemental agreement of April 30, 1917. It is now positively agreed between the parties hereto that the said 5 per cent bonus or concession shall be deducted from or taken off the hereinbefore stated rates on April 1, 1922.

In the Miller Vein on the main line of the Pennsylvania R.R. where any bottom is taken up or where rolls are being cut in the bottom, 69c. per yard shall be paid for farm work. The main line includes only operations at Dunlo, Portage Branch, Lanfair, South Fork, Beaverdale, Ehrenfeld, Portage, Sonman, Bens Creek, Lilly, Cassandra, Cresson, Gallitzin and Bennington, and shall not include any other points than those above named.

INSIDE DAY-WAGE SCALE

Occupation	Rate per Day	Occupation	Rate per Day
Motormen	$6.10	Trip riders	$6.00
Spraggers	6.00	Water and machine haulers	6.00
Skilled wiremen in charge of work being done	6.00	Timbermen	6.00
Wiremen's helpers	5.77	Pipe men	5.92
Track layers	6.00	Trappers	3.18
Track layers' helpers	5.77	Cutters	6.10
Bottom Cagers	6.00	Scrapers	5.85
Drivers	6.00	All other inside day labor not herein specified	5.77

OUTSIDE DAY-WAGE SCALE

Occupation	Rate per Day	Occupation	Rate per Day
Dumpers	$5.42	Trimmers	$5.36
Ram operators	5.60	Car cleaners	5.10
Pushers	5.18	Firemen now working on change shifts of eight hours each	5.60

All other firemen to receive $1 per day advance over the contract prices in effect Oct. 31, 1919, based on the present standard number of hours now constituting a day's work under such employment at each operation.

All main hoisting steam-plant engineers working on changing shifts of eight hours each shall be paid not less than $5.65 per day nor more than $6 per day; provided, however, that where any engineer is paid more than the maximum rate, he shall have the option of continuing his present hours, conditions and rates or accept a rate not greater than the maximum rate hereinbefore provided for eight hours' work.

All sub-station engineers and attendants shall continue work on and under the present customs and conditions at $1 per day increase over prices in effect Oct. 31, 1919, based on the present standard number of hours now constituting a day's work under such employment at each operation.

Other Engineers' Hours Remain Unchanged

All other engineers, excepting those herein above mentioned, shall work the same hours and at the same rates as at present plus an advance of $1 per day over the prices in effect Oct. 31, 1919, based on the present standard number of hours now constituting a day's work under such employments at each operation.

All boys under eighteen years of age receiving on Oct. 31, 1919, not more than $2.65 per day shall be advanced 53c. per day; and all boys on Oct. 31, 1919, getting more than $2.65 per day and less than man's wages shall be advanced 53c per day based in both of the above-mentioned cases on the present standard number of hours now constituting a day's work under such employment at each operation. The provisions as to eight hours for firemen and engineers are subject to the usual exceptions in cases of emergency.

All other outside able-bodied day labor, except coke men, to be advanced $1 per day over the prices in effect Oct. 31, 1919, based on the present standard number of hours now constituting a day's work under such employments at each operation; but the total wage shall not be less than $5 per day.

All monthly men shall be advanced $1 per day over

the prices in effect Oct. 31, 1919, based on the present standard number of hours and days now constituting a month's and a day's work under such emploments at each operation; provided, however, that this clause shall not apply to mine foremen, assistant mine foremen, fire bosses or bosses in charge of any class of labor inside or outside the mine, or coal inspectors or weigh bosses.

All labor engaged in the manufacture of coke shall be advanced at the rate of $1 per day over and above the prices in effect Oct. 31, 1919, with the exception of boys under the age of eighteen years, who shall be advanced to a minimum wage of $3.50 per day. The application of said advance in both cases mentioned in this paragraph shall be based on the present standard number of hours, average ovens drawn and average cars loaded per man, now constituting a day's work in such employment at each operation.

The charge for blacksmithing shall be 0.75c. per ton for pick mining, and 0.5c. per ton for machine mining. The operators agree to use every reasonable effort to have the miners' tools repaired and sharpened with as little delay as practicable.

All differentials in tonnage and yardage rates existing under the 1914 scale agreement shall be continued and remain in force during the life of this agreement, or until April 1, 1922.

The practice of voluntarily paying more than the contract price, either by bonuses or otherwise, which is done ordinarily for the purpose of enticing employees from other mines, and thereby creating discord and disorder in the coal industry, is condemned. It will therefore be assumed in any future joint conferences convened for scale-making purposes that all voluntary bonuses or advances in excess of wages provided in contract were paid because of physical conditions in or around the mines where such methods are practiced, and the wages so paid shall be considered the base price for such mines.

All the customs, conditions and provisions existing under the 1914 scale agreement shall remain unchanged during the period covered by this agreement, except as modified or changed by the following rules and regulations:

Rule 23—House rent shall be the same as during the period expiring March 31, 1920, plus an adjustment for substantial improvements if and when made or added, after March 31, 1920. In case of dispute as to increased rent, the same shall be settled under Rules 12 and 13.

Rule 34—That the pushing of cars, loaded or empty, by the mine workers is natural to the industry and is an integral part of the day's work, and that through the negotiations of thirty years this work, where practiced, has been paid for in the general tonnage rates; but in this district at all mines where cars are pushed both ways by the miner the operator shall pay for this work the sum of 6c. per gross ton, or its equivalent net. Whenever the operator reduces the car-pushing work to a one-way push in the direction at the choice of the miner, the compensation shall cease. This clause shall not be taken to authorize an adverse change in conditions at mines as to the handling of cars where they are now handled one or both ways.

Rule 35—That the price at which house coal shall be furnished the mine workers at the tipple shall be determined by adding to the price in effect on Oct. 31, 1919, the average percentage allowed as an increase on the wage scale, to wit, 27 per cent, and that when coal is delivered to the miners' houses by the operator the actual cost of delivery shall be added.

Rule 36—That explosives shall be furnished the miners at cost, which is to include handling, transportation and insurance.

Eastern Ohio Miners Concede a Fair Scale

After Naming a Lot of Concessions That Would Have Put Eastern Ohio as a Mining District off the Map for Some Years, Leaders of Mine Workers Assent to a More Reasonable Settlement

A WAGE-SCALE agreement was reached Tuesday, May 4, at Cleveland between the scale committees representing the miners and operators of the eastern Ohio field. The agreement follows a deadlock of two weeks. Consideration of the scale was taken up first at a joint convention of miners and operators held at Odd Fellows' Hall, in Wheeling, W. Va., beginning April 19. After a disagreement the scale was referred to joint scale committees, who remained in session there until April 22, and adjourned to Cleveland. The joint committees remained in session until May 4, when the agreement was reached which will mean continuous operation of mines until April 21, 1922, when a new scale must be framed.

The miners' committee was headed by W. T. Roberts, as chairman; Edward Reibold, Joseph O'Grady, Ettor Del Guzzi, William R. Truax, Alex. Felczan, Ira Kimes, James Kunik, Jack Bell and Leibold Zearott, elected at the Bellaire convention.

The operators' committee consisted of S. H. Robbins, as chairman; W. L. Robinson, Michael Gallagher, C. E. Maurer, H. E. Willard, E. L. Thoner and T. K. Maher, all of Cleveland; T. H. Johnson, of Bellaire; Joseph Meister, of Bridgeport, and R. L. Wildermuth, of Columbus.

Under the new agreement the tonnage scale was increased 34c. and day labor and dead work 20 per cent. The miners will receive 3c. an inch for the removal of the first 12 in. of "draw slate." The old contract called for payment only for slate in excess of 12 in. in thickness, the rate being 9c. an inch.

The original demands numbered forty-one, and it is interesting to record them at length, though probably no one seriously thought that everything asked for would be granted. They included: (1) Payment on mine-run basis; (2) No discrimination in hiring of men, the men being employed in the order in which they present themselves, men with good union cards being given preference; (3) Payment of all day men for actual time worked with time and a half for overtime and double

time for Sundays and half holidays; (4) Entire elimination of Rule 4; (5) Free tools and free house coal to all workers in and around the mines; (6) Pay for all stone; (7) Delivery of all cars to face of working place; (8) Company to do all track laying, using iron rails exclusively.

Not Much Overlooked in Demands

Other demands are: (9) Placing of all weigh houses so that the check weighman can see the scales; (10) Better sanitary conditions in mining communities; (11) Washhouses large enough to accommodate all the mine workers employed; (12) Daymen to receive the same percentage increase as the tonnage men; (13) Payment of $2.50 for each crossbar set or erection of crossbars by company men; (14) Elimination of Rule 17; (15) Payment for the amount of coal lifted and for restoring a place to normal conditions wherever a miner has to take up an excessive thickness of bottom in coming to, or going over, a roll, this being in addition to the regular payment in accord with the roll rule; (16) Payment to machine men for actual time consumed in moving a machine from entry to entry; (17) The leaving of all "bottoms" in place.

The mine workers also ask for: (18) Payment to all machine men for setting and resetting posts; (19) The right of all daymen who are not satisfied with the wages under this scale to receive an average place in the mine; (20) Payment to machine men for cutting-over tracks; (21) Payment of 15c per ton extra for all butt work and for all places driven on an angle off the face; (22) Elimination of double shift and night shift; (23) Introduction of the section check system: (24) Payment to be made to loaders in rooms for all wet yardage, the rate being the same as in entries.

In addition the mine workers are seeking: (25) Payment of the maximum inside day wage where men have to go home because of some fault in the company management; (26) Payment to machine men for "crush coal"; (27) Itemized report to be made to local secretaries of the union of the money checked off the rolls for union purposes; (28) Delivery of all supplies to the face of each room and the unloading of these supplies by daymen; (30) Elimination of Rule 7; (31) Uniform day wage for all inside and outside day labor, the maximum inside day wage being made the basis for the rectification; (32) Hauling of all men in and out of the mine at company expense.

Other demands are: (33) Elimination of the figures $25 from Rule 26, second paragraph, sixth line; (34) Delivery of powder to the working place; (35) Extra compensation to loader for any double shoveling made necessary by excessive width of working place; (36) Posts to be delivered in half-foot lengths and to the working place; (37) Insertion of all interpretations of the contract in the contract; (38) May 1 as an additional holiday; (39) Elimination of Rule 28; (40) Fixing of pay day on every Saturday beginnig at 12 noon; (41) Setting payment of loader at 79c per ton and of machine man at 15c per ton.

Keen Competition Affects Scale

The sub-district covered by the contract includes that district of eastern Ohio which mines the No. 8, or Pittsburgh, bed and the West Virginia Pan Handle mines. Severe competition requires a scale in line with those provided for adjacent dstricts.

Renton Coal Mines, of Washington, To Be Flooded and Abandoned

With an Output of 116,000 Tons in 1919 the Company Operating the Mines Lost $126,000

THE Renton coal mines, the oldest and best known in the State of Washington, are to be flooded and abandoned. Orders have been issued to remove the equipment, take out the pumps and let the mines fill with water, with the announced purpose of making no further attempts to mine any of the remaining four million tons of coal still in the lower levels of the property. According to the company's surveys, there is enough coal in the veins to give a further life of thirty years to the mines, based on the productive capacity of the properties in the past. In addition to abandoning these mines the company is also surrendering to the Renton Coal Co. leases from the Northwest Improvement Co. which still have eighteen years to run.

The reasons given tell a tale of losses and discouragement that left no other alternative. Briefly, they state that with an output of 116,000 tons in 1919 there was a total loss of $126,000, or that every ton mined cost $1.09 per ton more than the company received for it. Coal at the surface exceeded in cost $6.50 per ton.

Labor at the mine received a fraction more than 92 per cent of all the gross revenues, leaving less than 8 per cent of the total receipts for all other costs, such as timbering, supplies, power, maintenance, taxes and interest.

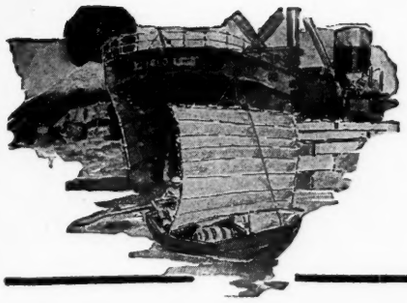
"If the mine could not operate under the wage schedules in force Nov. 1, last," said Manager W. J. Grambs, "the new schedules, carrying an increase of 14 per cent, granted under the order of President Wilson, are out of the question. We can't meet them. When there was a shortage of coal last summer the Renton Coal Co. undertook to increase its output.

"At the same time the Northwest was facing a shortage in water power. This meant more coal would be required for power purposes, as steam must supplant hydro-electric power whenever there is a water shortage. The Puget Sound Power & Light Co., from whom the Renton Coal Co. leased the mines, was asking for 140,000 tons of coal for its steam plants. Orders were issued, therefore, to speed up, and in place of working two shifts at the mine we increased the working force to three shifts.

"The output dropped alarmingly instead of increasing in proportion to the increase in the working force, and the three shifts mined only a little more than half as much coal as had been mined previously by the two shifts. Our output should have increased 50 per cent. Instead, it decreased nearly 50 per cent. So on Sept. 25 we ceased mining and closed the mines."

There is a record of coal shipped into Seattle in 1869, but it was not until the early '70's that these mines entered upon the career that made them historic.

The Seattle Electric Co. acquired the mines in 1900. They are now owned by the Puget Sound Power & Light Co. and are under lease to the Renton Coal Co., a subsidiary corporation, of which W. J. Grambs is manager. These mines yielded 3.8 per cent of the coal mined in the State last year and about 2,400,000 tons since 1900.



Foreign Markets and Export News

New Zealand's Coal Production Declines

The coal situation in New Zealand at this time, Consul General Alfred A. Winslow, Auckland, reports, is far from normal, and the outlook is not very promising, notwithstanding the fact that there is an abundance of a fairly good quality of bituminous, steam, and house coal in sight of the Dominion. Coal production in New Zealand has been declining since 1917, despite the fact that the demand for fuel has been increasing. This shortage has interfered quite seriously with certain developments that were under consideration, as well as limited the output of certain industries in the Dominion.

The output of the coal mines of the Dominion in 1913 was 1,888,005 long tons; in 1914, 2,275,614 tons; in 1915, 2,208,624 tons; in 1916, 2,257,135 tons; in 1917, 2,068,419 tons; and in 1918, 2,034,250 long tons; with 145,069 long tons as the output for the first seven months of 1919. Some 200,000 tons of this yearly output are lignite. The two State-operated mines produce from 200,000 to 280,000 long tons annually.

The coal resources of the Dominion have been estimated at 2,358,000,000 long tons, with an estimated 896,000,000 tons in proved deposits, made up of the following items:

Kind of Coal	Proved Tons	Probable Tons
Anthracite	Very little	Very little
Bituminous	269,000,000	450,000,000
Semi-bituminous	114,000,000	341,000,000
Brown	234,500,000	728,000,000
Lignite	278,500,000	839,000,000
Total	896,000,000	2,358,000,000

The annual consumption of coal in New Zealand in normal times is about 2,500,000 long tons, of which approximately 15 per cent is imported; but during the last three or four years the consumption has fallen, for the reason that the domestic output has fallen off and it has been difficult to secure the necessary imports. The large consumers of New Zealand coal are the State railways, the several gas works and electric light plants of the Dominion, shipping interests, and the different industrial interests.

Coal Mines of China Report Increased Production

Consul Douglas Jenkins reports that coal continues to be produced in the Kailan mines in increasing quantities. The average daily output in 1918 was about 10,000 tons. Over one-half of this coal was sent to Shanghai and other Chinese ports. Of the amount shipped to foreign countries about one-half went to Japan and the remainder chiefly to Hongkong, the Philippine Islands and Chosen.

The daily production in 1918 of the two other principal coal mines of this district, the Ching-Hsing and the Fu Chung Corporation, was 1,000 tons and 4,000 tons, respectively. The cost of coal on the local market showed no material change as compared with previous years, and its advance elsewhere was entirely due to high freights and attendant charges.

There was also an advance in the production of coke, which is needed for foundries and dockyard work in Japan, Shanghai, and Hongkong. The supply was not equal to the demand.

The quantity and value of the coal exports from Tientsin during 1917 and 1918 were as follows:

	1917		1918	
Articles	Tons	Value	Tons	Value
Kailan	26,150	$106,692	28,121	$142,580
Ching-Hsing	.....	.....	4,816	31,500
Shansi	1,015	4,659	2,905	16,011
Bunker	54,417	222,021	50'923	258,193

Great Britain Expends £32,200,000 in Coal Subsidy

Lincoln Hutchinson, commercial attaché, London, reports that the British Chancellor of the Exchequer, in giving particulars in the House of Commons on Feb. 17 as to the expenditure to date and the estimate total expenditure for the current fiscal year (ending March 31, 1920) on account of the coal subsidy, said the figures were £22,631,000 to date; £32,200,000 for the year.

Chinese and Japanese Are Mining Coal in Manchuria

The mining possibilities in Manchuria, Consul General E. Carleton Baker, Mukden, reports, are generally assumed to be enormous, but the present developments are of a limited character. Coal is already being extensively mined both by Japanese and Chinese. The former are working large deposits with modern machinery, while the latter are still using crude native methods. The Chinese are planning, however, to obtain modern mining equipment, and it is expected that there will soon be a considerable demand for American machinery.

Australian Coal Mined During March

Coal mined in Australia during March, according to a cablegram from the American consulate at Newcastle, Australia, totaled 400,000 tons. Of that amount 93,113 tons were exported, 43,000 tons were used to supply bunker coal for foreign vessels, while the remainder was consumed locally. The rate of freight to the western coast is $18 United States currency, while the rate to Honolulu is $10. Coal is being carried to Manila by Japanese vessels.

Canada Imports 21,411,813 Tons of Coal from United States

According to figures recently issued by the Canadian Bureau of Statistics, Ottawa, Canada purchased from United States last year 21,411,813 tons of coal, valued at $70,603,005. Total exports of coal from Canada were valued at $10,380,186 and her total production in 1919 was 13,676,300 tons, of which 73,893 tons were anthracite.

Coal Imports at Harbin

Imports of coal into the Harbin consular district through the custom houses at Harbin, Manchouli, Suifenho, Aigun, and Sansing in 1918 were valued at $301,586, compared with $172,437 in 1917 and $115,303 in 1916.

Quarterly Imports of Coal and Coke During 1919*

Coal—	Jan. 1 to Mar. 31, 1919		Apr. 1 to June 30, 1919		July 1 to Sept 30, 1919		Oct. 1 to Dec. 31, 1919	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Anthracite	23,995	$175,837	5,737	$40,765	9,026	$63,272	35,187	$242,545
Bituminous and shale	205,065	1,127,994	173,227	979,826	159,346	909,017	354,178	1,875,859
Slack or culm	81	422	128	409	4,797	27,733	6,348	29,426
Coke	4,934	49,118	1,759	16,691	1,195	10,711	6,832	63,133
Charcoal	379,112	8,719	73,491	5,788	203,168	15,246	1,258,857	15,506
Compositions used for fuel	10,200	82	.....	.....	35,400	177	225,600	791
Total value	.....	$1,362,172	.....	$1,043,479	.....	$1,027,156	.....	$2,227,260

*Compiled by Bureau of Foreign and Domestic Commerce.

Demand for Tonnage to Europe Is Less Urgent

W. W. Battie & Co.'s coal trade freight report announces numerous charters of steamers for single voyages, consecutive voyages and transportation contracts to Europe, and although the demand for tonnage still continues it is not quite as urgent as it was. The demand for tonnage to South America and the West Indies still continues and rates are a little firmer than a week ago.

Rates for May loading are as follows:

	Rate	Tons Displaced
Copenhagen	23.50/24.00 —	1,000
Stockholm	24.00/25.00 —	800
Gothenburg	23.00/24.00 —	1,000
Antwerp/Rotterdam	About 19.50 —	1,000
Hamburg	21.50/22.00 —	1,000
French Atlantic, excluding Rouen	About 20.00 —	700
Barcelona	About 23.00 —	1,000
Algiers	23.00/23.50 —	800
Genoa/Leghorn	About 23.00 —	1,000
Spezia/Savona	About 23.00 —	1,000
Piraeus	26.00/26.50 —	1,000
Trieste/Venice	26.00/26.50 —	1,000
Port Said	About 26.00 —	1,000
Constantinople	26.00/27.00 —	500
Pernambuco	14.50/15.00 —	500
Bahia	14.50/15.00 —	500
Rio	About 14.50 —	1,000
Santos	15.00/15.50 —	600
Buenos Aires or La Plata or Montevideo	About 13.50 —	1,000
Para	About 14.50 —	500
Rosario	About 15.00 —	750
Bahia Blanca	About 15.50 —	1,000
To Nitrate Range	9.00/10.00 —	750
Havana	6.50/ 6.75 —	600
Sagua or Cardenas	About 8.50 —	300
Cienfugos	8.00/ 8.25 —	500
Caibarien	About 8.50 —	300
Guantanamo	8.00/ 8.25 —	500
Manzanillo	About 9.00 —	300
Bermuda	7.00/ 7.50 —	300
Bermuda p.c. and dis. free Kingston	About 9.00 —	400
St. Lucia	About 10.00 —	500
Barbados	About 10.00 —	500
Santiago	8.00/ 8.25 —	500
Port of Spain, Trin	About 10.00 —	500
Curacao	9.00/ 9.50 —	500
Free p.c. Curacao Demerara	13.00 —	400
St. Thomas	About 9.00 —	500

All above rates, gross form charter.

Coal Imports by the Straits Settlements

Consul General Edwin N. Gunsaulus, Singapore, reports that a table compiled by the local chamber of commerce shows the following imports of coal into the Straits Settlements for the month of January, 1920, with the countries of origin:

	Tons
Japan	17,872
Borneo	510
India	16,609
Elsewhere	336

Belgian Miners Demand 15 Per Cent Increase

At a meeting of the Belgian National Federation of Coal Miners held in Brussels March 14, Trade Commissioner C. E. Herring, Brussels, reports a general increase in wages of 15 per cent, effective March 1, was demanded. The federation also adopted resolutions calling upon the Belgian government to equalize and establish a maximum of profits for coal mines, to establish national selling agencies under government direction, and to use the excess profits resulting from new price regulation for the creation of a fund to provide for the assistance of needy workmen. The latter measures should become operative by July 11, according to the federation.

The membership of the federation showed a remarkable increase of strength during the past year. On March 31 there were 52,000 members in Belgium; on June 30, 73,000; at the end of September, 92,000, and at the end of 1919, 123,000 or about 85 per cent of the miners of the country. The funds at the disposal of the central and regional federations totaled 3,140,000 fr.

Report of Lake Coal Traffic

West bound traffic through canals at Sault Ste. Marie, Michigan and Ontario for the month of April, 1920, as reported by L. C. Sabin, general superintendent, St. Marys Falls Canal, Michigan, was as follows:

	U. S. Canal	Can. Canal	Total
Coal, soft, short tons	42,831	8,000	50,831
Coal, hard, short tons	10,000	....	10,000
Stone, short tons	6,247	....	6,247
General merchandise, short tons	12,500	2,905	15,405

Mesopotamia Increases Imports of Coal

According to a report by Consul Oscar S. Heizer, Bagdad, imports by Mesopotamia through the port of Bassorah of coal, coke and patent fuel during the period May-December, 1918, from India were valued at $108,425 and from Persia $3,660. The total 1918 imports of coal, coke and patent fuel amounted to $231,290; for 1917. $76,867.

Exports from Seattle Over $2,000,000

The domestic and foreign imports and exports of coal through Seattle last year, according to figures just made public by U. S. Collector of Customs R. H. Drumheller, totalled 373,596 tons, valued at $2,536,921, of which 344,086 tons, valued at $2,334,171, were imported.

By far the largest share of this trade came from Canada, divided as follows—65,605 tons of anthracite, valued at $494,367, and 257 tons of bituminous coal, valued at $1,716,877.

Seattle's exports of coal to Canada were but 62 tons, worth $1,337. Other exports were 30,437 tons to Alaska, valued at $201,131, and 11 tons (worth $282) to the Hawaiian Islands. During the year 18,076 tons were brought to Seattle from the Atlantic Coast and 1,879 from California, valued at $111,476 and $11,274, respectively.

New Zealand Coal Imports Increase; Exports Decrease

Coal imports by New Zealand during 1919, according to commerce reports issued by the U. S. Bureau of Foreign and Domestic Commerce, were valued at £382,016, compared with £202,102 in 1918, £214,152 in 1917 and £189,526 in 1916.

Exports of coal during the same period were: £201,383 in 1919; £227,228 in 1918; £236,063 in 1917, and £326,563 in 1916.

Owing to unsettled rates of exchange values are not given in dollars.

Belgian Coal Production Increases, but Output Per Man Is Less

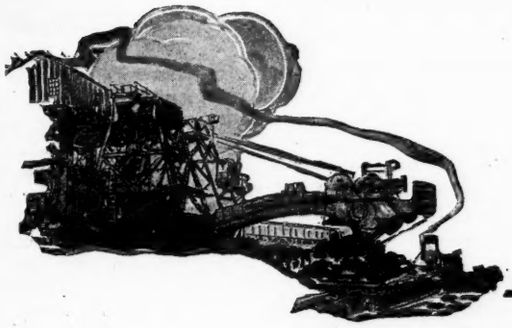
Trade Commissioner C. E. Herring, Brussels, reports that the need of increasing coal production in Belgium is urgent, as exports of non-industrial coal are a very important item in decreasing Belgium's large adverse trade balance. The necessity for increasing the output of coking coal is perhaps even greater, because of difficulty in obtaining adequate deliveries from Alsace-Lorraine and Germany.

The output for the entire year 1919 was 18,487,230 tons, compared with 13,887,600 tons for 1918.

The following table gives the Belgian production of coal in 1918 and 1919. The comparative decrease in output in relation to the number of operatives is largely due to the general introduction of the eight-hour day in Belgian mines. According to statistics prepared by the Mine Workers' Syndicate, the average output of miners steadily increased during the past year, having been 54 kilos (120 pounds) per day more in November than in January.

The output for the first and second half of 1919, by districts, follows:

District.	Net production.	Stocks on hand.	Workmen.
	Tons.	*Tons.*	*Number.*
Jan.-June, 1919:			
Couchant de Mons	1,802,660	219,840	32,463
Center	1,402,680	167,510	23,465
Charleroi	2,958,860	818,860	42,377
Namur	232,610	72,890	3,630
Liege-Seraing	1,611,320	176,370	27,485
Plateau de Herve	382,790	27,970	4,904
Limbourg	52,160	2,350	1,077
Total, Jan.-June, 1919	8,443,080	1,485,790	135,401
Total, Jan.-June, 1918	7,562,960	625,040	117,450
Gain in 1919	880,120	860,750	17,951
July-Dec., 1919:			
Couchant de Mons	2,244,820	93,380	34,724
Center	1,711,100	42,070	25,329
Charleroi	3,310,280	324,250	47,576
Namur	278,080	27,820	3,955
Liege-Seraing	1,933,010	54,370	30,803
Plateau de Herve	479,090	1,810	5,713
Limbourg	87,770	3,000	1,562
Total, July-Dec., 1919	10,044,150	546,700	149,662
Total, July-Dec., 1918	6,324,640	1,295,130	110,922
Gain in 1919	3,719,510	.....	38,740
Loss in 1919	.....	748,430	.....



Production and the Market

Weekly Review

More Hopeful Outlook for Car Supply at the Mines—Consumers Are Waiting for Coal that Has Been Shipped and Is Tied Up in Railroad Yards—Anthracite Production Keeps Up, but the Market is Upset in the Absence of May Circulars.

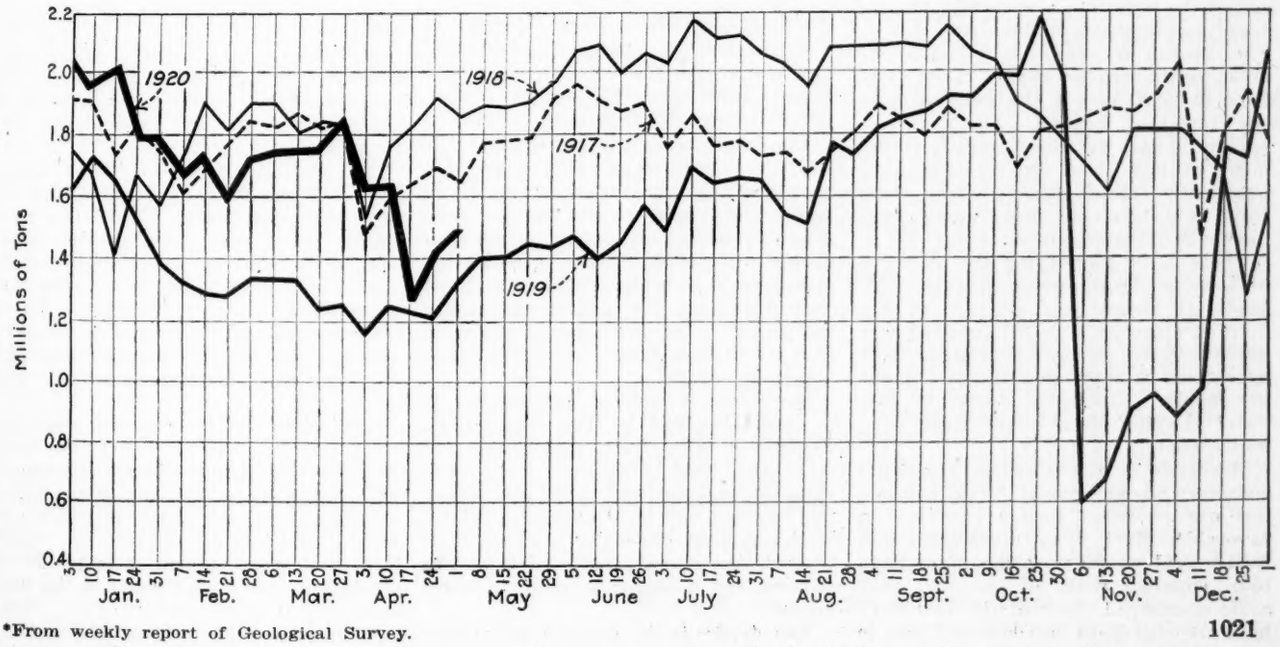
MORE coal and easier conditions are reported generally in all centers during the past week. The Geological Survey reports a gradual improvement in production the past three weeks with an output of 8,898,000 tons of bituminous and 1,792,000 net tons of anthracite in the week ended May 1. The week of May 8 will show still further gains, but not until the railroad labor is all back at work and the innumerable tangles in traffic have been straightened out will production again reach the 11,000,000 tons a week toward which efforts were being set when the switchmen's strike upset calculations.

There is no let-up in the demand for steam coal, and the cold weather that has extended into May has called for more than normal quantities of domestic sizes. The market is reported exceptionally strong in the South, with car shortage of more than usual extent in the Birmingham district. The condition of stocks is such that in nearly every industrial center some consumers are really suffering for lack of fuel, and in Milwaukee rationing of what little coal was getting through was seriously considered last week.

Prices are holding firm, with the bulk of the coal, however, going forward on contract at prices below the present spot price level. Sentiment among coal shippers is strongly in favor of moderate charges, but there are enough who cannot resist temptation to furnish material for those who see only bad in the industry.

Anthracite production has been maintained at a higher rate this spring than last, despite the difficulties interposed by the railroad strike. Deliveries have not fared so well and numerous communities are registering complaints of anthracite shortage when the coal they want is perhaps tied up in a railroad yard but a short distance away. Anthracite prices are as yet uncertain. In New York the April circular is reported in effect, whereas in Philadelphia no mine prices are quoted and retailers have increased prices to the consumer. This state of uncertainty is bound to persist until the wage question is finally settled and operators can figure costs on the new scale.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Buyers Active in the Region — Car-Supply Shows Only Moderate Improvement — Output Further Curtailed by Floods — Rail Movement Somewhat Better—Strong Demand in Every Direction—Dumping at New York Piers Increases—Norfolk and Newport News Despatch About Normal — Prices Rule High—Anthracite Unchanged—Domestic Sizes Come Forward Very Slowly.

Bituminous — Active and insistent buying is the main feature of the current market. Representatives of large corporations are in practically all the districts of Central Pennsylvania, as well as in West Virginia, and they are on the spot with cash for prompt coal. There is much less quick coal offering than was the case a fortnight ago and there are rumors of more than $6 per net ton being offered for coal of only indifferent grade. It is to be hoped, however, that operators will hold quotations down within reasonable limits.

There are signs of better car-supply. The New England roads are making better returns of empties, and from other lines there are also hopeful developments. On the New Haven road consumers are in constant distress for coal, due to the heavy volume seized for locomotive supply. The Harlem River gateway has been prostrated for several weeks on account of strikes in New York harbor.

Receipts at the all-rail gateways reflect the gradual improvement in car-supply, other than on the New Haven. The Boston & Maine is steadily increasing the number of cars taken daily from the Delaware & Hudson and from the New York Central. The Boston & Albany is back to almost normal movement of coal, and confiscations have practically ceased, except where company coal taken by intervening lines has made replacement necessary.

There is no gainsaying the strength of demand from every quarter. All kinds of buyers are actively in the market, although here it is noticed that purchasers are generally confining their operations to their accustomed sources of supply. Distinctly there is less "wild" buying than might have been anticipated.

Despatch at the Virginia terminals continues about normal. The increasing use of much larger cars has a favorable effect upon movement, and for several weeks now the piers have been supplied with all the coal that could be dumped. Receipts in New England are still light and less and less is heard in the open market with regard to Pocahontas and New River. At least one large contract, made in 1915 for 5 years, is to expire this season, and it will be of much interest to see what new contract offerings will be around July 1.

Quotations at wholesale range about as follows:

	Cambrias and Somersets	Clearfields
F.o.b. mines, net tons	$4.75@$5.50	$4.50@$5.25
F.o.b. Philadelphia, gross tons	7.15@ 7.95	6.95@ 7.50
F.o.b. New York, gross tons	7.50@ 8.50	7.50@ 8.00

Pocahontas and New River contract prices from April 1 have ranged from $6.54@$7.50 f.o.b. Hampton Roads. Spot prices at the same piers are from $8.50 @ $9.50. On cars Boston or Providence prices are $10.75@$12 per gross ton.

Anthracite—No further developments in anthracite have come to light at this writing. Embargoes are still in effect against large parts of New England, and by water it will take several weeks to begin to make up for the suspension of dumping at the piers. Tows are moving with fair regularity, and if strikes and other obstructions can be avoided, there should be a reasonably good tonnage moved forward during May, June and July. If maximum movement is not attained during those months the future will indeed look dark for this territory.

Tidewater

NEW YORK

April Anthracite Prices Mainly in Force—Dumping of Coal Gaining—Trade Uncertainty Due to No Mine Wage Agreement—Bituminous Situation Serious—Receipts Low.

Anthracite—The lead set by the Lehigh Coal & Navigation Co. last week in advancing the price of domestic anthracite $1 per ton has not yet been generally followed by the large producers but some of the independent operators have accepted the prices and have added the 75c. differential to the new prices. The large producers state that no change from the April prices had been ordered.

More coal is coming forward but it is soon absorbed by the local trade. Shipments both from the mines and from the local tidewater docks continue to be interfered with because of the railroad and local marine troubles. With the men gradually drifting back to work the dumping of coal is slowly gaining and a larger tonnage is being moved.

The trade is in a state of uncertainty because of the failure of the operators and miners to decide on a new wage agreement. However the Washington conferences may at any time have a happy termination.

It is difficult to get fuel to tidewater and to the Great Lakes and one big producer has begun to dump coal at one of its storage plants, while other railroads are reported to have placed embargoes on shipments to Buffalo.

The local retail yards are short of coal and deliveries being made subject to the prices to be set by the producers when the wage conferences are ended. Coal is being delivered in one or two-ton lots to those who need it most.

The demand for the smaller sizes is strong but the supply inadequate to meet the demand. Buckwheat for spot delivery is being quoted at from $4.25 to $4.75; rice around $3.25 and barley around $2.

Current quotations for company coal per gross ton at mine and f.o.b. tidewater at the lower ports are as follows:

	Mine	Tidewater
Broken	$5.95	$7.80
Egg	6.35@7.35	8.20@9.20
Stove	6.60@7.70	8.45@9.55
Chestnut	6.70@7.70	8.55@9.55
Pea	5.30	7.05
Buckwheat	3.40@3.75	5.15@5.50
Rice	2.75@3.25	4.50@5.00
Barley	2.25@2.50	4.00@4.25
Boiler fuel	2.50	4.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—There is little coal at the docks. The railroad trouble is not completely ended and, while most of the men have returned to their work, some difficulty is met in moving the boats when they are loaded. The railroads continue to take coal intended for commercial use, which must be replaced by the shippers.

The situation here has become serious. One of the trolley lines operating on Long Island was compelled to suspend operations one day last week because of its inability to obtain coal. Several city departments were able to operate only because of the work of policemen in bringing coal to the city from the lower ports.

Car supply is ragged, many mines not getting more than one-third of their quota of cars. With the railroads taking coal, commercial users will have difficulty in getting prompt shipments. Very little quoting is being done for local delivery. There is much difficulty in keeping bunkers supplied and on this account steamers are frequently delayed in leaving this port.

Quotations for some of the pools are not always available. Early this week Pools 1 and 9 were being quoted at $6.25 to $6.50 per net ton, mines; Pool 10, $6 to $6.25; Pool 11, $5.50 to $5.75, and Pool 18, $5 to $5.50. Gas coal was quoted around $6.50. Quotations for loaded boats in the harbor ranged from $10 to $12. Towing charges ranged from $1 to $1.25 per ton.

PHILADELPHIA

Anthracite Prices Unsettled — Final Circulars Due When Wage Dispute Is Cleared — Retailers Increase Prices — Heavy Premiums on Popular Sizes — Steam Trade Active, Especially in Buckwheat — Bituminous Continues Scarce with Light Receipts.

Anthracite—The price situation is quite complicated; most of the big producing companies having announced a schedule for current shipments—subject to change without notice. The chief cause of disturbance is that shipments will be made subject to prices to be fixed for the coal at a later date. That is at such time as an agreement is reached with the miners on a new-wage scale. Thus the dealers are compelled to take a chance in fixing their retail prices.

An increase of $1 a ton on the prepared sizes has been announced, but it is believed that the increase to be allowed the miners will mean an even higher advance in the wholesale rates. Retail prices on the various family sizes are as follows: Egg from $12 to $12.75, stove and nut from $12.75 to $13.25, and pea $9.75 to $10.50. This is for a gross ton of 2,240 lb. Dealers are mostly quoting only on such coal as they have in their yards for delivery.

It is almost certain that the range of retail prices as given above cannot continue long, as the dealers have allowed themselves little increased margin over the wholesale price. It is believed when the price policy is settled for the year by the big companies the retail increases occasioned thereby will be such as to cause much comment.

The shipments into the city have been extremely light during the past ten days and the trade expects light shipments all summer long. The consuming public still insists on its preference for stove and nut and as a result of this some of the independent houses are asking prices well above $9 for these sizes.

In New England there is ample opportunity to move the coal at heavy premiums, and if it were not for frequent embargoes both rail and tide, there would be even a greater tonnage moving in that direction at top prices.

Using the circular of one of the big producing companies as a basis the anthracite prices per gross ton at mines for line delivery and f.o.b. Port Richmond for tide are about as follows:

	Line	Tide
Broken	$7.35	$9.20
Egg	7.35	9.20
Stove	7.70	9.55
Nut	7.70	9.55
Pea	6.00	7.60
Buckwheat	4.00	5.05
Rice	3.00	3.90
Boiler	2.50	3.50
Barley	2.25	3.15

Bituminous—The situation is still impeded by the light car supply. Only a light tonnage of coal is reaching this market. The heaviest tonnages are being received by the public utilities. The manufacturing plants, however, are going along on the narrowest kind of a margin, some of them even being on reduced production. The steel mills have never been able to catch up since the rail strike.

Contract customers are receiving only meager deliveries, while spot coal has in some instances touched the $6.25 mark for the highest-grade fuels. Were it not for the fact that tide shipments are frequently embargoed, thus throwing more or less tonnage on the line trade, still higher prices would prevail. The railroads are in constant need of fuel and they confiscate commercial shipments.

Recent quotations have been: Pools 9, 10 and 11, $6, with occasionally $6.25 asked for strictly Pool 9. Pool 18, $5.50 to $5.75; these are for coals originating on the Pennsylvania R.R. For Baltimore & Ohio, Pool 9, 10 and 11 coal has been quoted at $5.50 to $6, with Pool 18 around $5. These prices are for the net ton f.o.b. mines. For coke there is a steady demand for foundry from $10.25 to $12, with furnace around $9.75. Domestic byproduct stove and nut is selling for $7. These prices are per net ton at ovens.

BALTIMORE

Prices keep climbing despite some breaks northward and $6 to $6.50 coal at the mines is more the rule than the exception. Foreign buyers eager to get coal at any price and export movement holds well despite embargo on all but shipments under railroad permits. Hard coal men raise prices.

Bituminous—The top notch for bituminous prices does not seem to have been reached. Despite predictions that the six-dollar mark per net ton as reached at the mines was the limit of the present rise, and the fact that there have been some signs of a break at northern points, because consumers are unwilling to take any coal except for immediate needs at that price, the rise has continued here.

At present the run is equal that of last month, about 70,000 tons of cargo coal having been handled the current week as export cargo fuel, and the expectation being that better than 300,000 tons will be loaded on this account during May.

The prices at tide here for best grades such as Pools 71 and 9 are all the way from $6.25 to $6.50 per net ton f.o.b. mines, while medium-value coals are selling at from $5.75 to $6. The lowest sales, those of Pool 18, are at from $5 to $5.25. Gas coals hold up well also, screened fuels commanding readily from $5.50 to $6, f.o.b. mines.

Anthracite—The definite hard-coal situation naturally waits upon the results to come from adjustments following the end of the Washington conference. Meanwhile the premiums paid by dealers here on any coal they can get through at this time are growing, and usually running between $1.25 to $1.50 above the old winter schedule. The result is that dealers are forced to sell at an advance over the old rates, and for the most part are charging a dollar a ton more than they did during the winter. This schedule is as follows: White ash—No. 1 (broken) $13.50; No. 2 (egg) $13.50; No. 3 (stove) $13.75; No. 4 (chestnut) $13.85, and pea, $11.25. Lykens Valley—No. 2, $14.20; No. 3, $14.60.

Lake

BUFFALO

Strike Cuts Out Coal Again—Conditions About as Bad as Formerly—Some Allegheny Valley Coal Gets In—No Steamboat Fuel—Anthracite Arriving Slowly—No Coke Market.

Bituminous—The old situation that prevailed during the first switchmen's strike is back again. Some effort has been made to get outside men to throw switches but it is a chance if any coal comes through. Somehow the supply seems to be sufficient, though nobody knows how it comes about.

One of the worst conditions is the lack of fuel for the Lake steamers. Some of them are able to manage temporarily by various expedients. But the business offering by Lake is small; so the owners have in many instances discharged their crews.

The car supply is anything but good. The Allegheny Valley mines had been furnishing most of the coal used here. from the time of the first switchmen's strike, and they would have continued if the cars had not run short. It is, of course, just as difficult to get an empty car out of a yard as it is to get a loaded one in.

It is next to impossible to get any price quotations, some shippers saying they are selling at any price they can get and others refusing to discuss the situation at all. The list, as given by one shipper, is $6.10 to $6.35 for Allegheny Valley, all sizes; $6.25 to $6.50 for Pittsburgh, No. 8 lump and three-quarter, and $6 to $6.50 for all slack, per net ton, f. o. b. Buffalo.

Anthracite—The anthracite trade is about as badly hampered as bituminous, though some of the roads have been able to marshal some forces to assist in getting the trains through the yards and to keep up a supply of coal. The demand is not very urgent; some distributors having a supply of buckwheat coal, for example, which does not move out.

Only one of the shipping agents has any water coal yet. The others do not now look for any right away, for it will take weeks to get into shape again after the strike is over. Something like 100,000 tons is now afloat, and a few cargoes have made their way through the ice that is still heavy in front of the harbor. Fuel is now becoming scarcer rather than more plentiful.

Coke—The coke situation is the same as that of bituminous coal. Cars do not move and there is no other way of getting a supply. There is really no coke market, prices being nominal on the basis of $12 for 72-hr. Connells-

ville foundry and $10.50 for 49-hr. furnace. With a little chestnut for domestic use at $7, adding to this the $2.60 freight gives the f.o.b. Buffalo price per net ton. The future of the trade for the season is uncertain. Some of the vessels are discharging their crews and tying up until the businesss shows a disposition to move.

CLEVELAND

Pooling of all coal receipts under direction of the Cleveland Chamber of Commerce is the latest plan to keep as many plants as possible operating. Receipts, while slowly increasing, are not over 25 per cent of normal for the season. Spot No. 8 mine-run and slack hold at $4.75 to $5, mines.

Bituminous—The crux of the entire fuel situation, so far as Cleveland steam-coal users are concerned, continues in the inability of railroads to place empties at the mines. At some No. 8 district mines not a pound of coal has been taken out for three weeks. The average operation does not work over 35 per cent, and a good share of this output is going to the railroads.

There is scarcely a plant in Cleveland that does not suffer from lack of fuel. A Chamber of Commerce bureau is pooling all receipts. Operators continue to avoid making contracts, with operating and shipping conditions so uncertain. Spot No. 8 mine-run and slack are commanding $4.75 to $5, f.o.b. mines, and operators foresee no change that will lower this level in the near future.

Demand, of course, continues several times the supply of all grades except domestic bituminous. Retail dealers' prices on No. 6 and No. 8 mine-run and slack are around $8.50, delivered, an increase of 75 cents. West Virginia splint, for domestic use, has been advanced to $9.50.

Anthracite and Pocahontas—Most dealers have continued their old prices on anthracite, but demand is seasonably light. Deliveries on Pocahontas are more deferred, and some dealers are entirely out.

Lake Trade—Lake Erie docks in April dumped 307,000 tons of bituminous coal, compared with 1,082,183 tons in April, 1919. Loading so far in May also has been light, and June 1 will probably see the Lake trade 2,000,000 tons behind last year.

Retail prices of coal per net ton delivered by dealers in Cleveland are:

Anthracite, and grate, $12.20@12.40; chestnut, $12.50@12.70; and stove, $12.50.

Pocahontas, shoveled lump, $10.50; and mine-run, $9.25.

Domestic bituminous, West Virginia splint, $9.50; No. 8 Pittsburgh, $7.75; Millfield lump, $8.50; and cannel lump, $11.

Steam coal, No. 6 and No. 8 slack, $8.50; No. 6 and No. 8 mine-run, $8.50; and No. 8 3-in. lump, $8.75.

MILWAUKEE

United Action Taken on Near Exhaustion of Coal—Emergency Committee Secures Temporary Relief—Rationing Postponed.

Milwaukee had a week of hysterics following the announcement by the leading dock company that it could not promise any more deliveries of coal. The panic increased when it became known that ships were lying at the docks because they were unable to obtain fuel and that one steamer had to pay $9 per ton to fill her bunkers.

The Governor of the state, the Mayor of the city and representatives of various civic organizations got together, appointed an emergency committee and appealed to Senator Lenroot to petition the Interstate Commerce Commission to speed the movement of coal cars in order to avert a financial and industrial crisis in the Northwest. As a result, 419 carloads of coal reached the city inside of three days. No rationing will now be undertaken for the next two weeks.

Eugene McAuliffe, of St. Louis, states that the entire nation will be confronted with a serious fuel situation next winter. He urged Milwaukee dealers to lay plans at once if they wanted to avert a shortage. The May advance in prices did not materialize here as yet, notwithstanding the scarcity of coal.

Thus far this season 25,221 tons of hard coal and 18,500 tons of soft coal have come by Lake, against 105,303 tons of hard and 181,032 tons of soft coal during the same period last year. At this time last year the docks held about 400,000 tons of coal, which had been carried over on account of the mild winter of 1918-19.

Inland West

COLUMBUS

Strike Slowly Breaking Up—Increased Output of Ohio Mines — Embargoes Still in Force — Demand for Steam Grades Especially Strong and Prices Higher.

Reserve stocks have been reduced to a low point in every line of manufacturing. Public service concerns and public institutions have been supplied for the time being. Extreme high prices are expected to prevail for some time.

Domestic demand is still strong. Retail stocks are light and in many cases exhausted. Retail prices are firm and show a tendency to advance in sympathy with higher quotations at the mines.

Pocahontas is quite scarce and little is available in this territory. West Virginia splints are also reaching this market in limited quantities. Hocking lump retails at $7.50 and higher, while West Virginia lump is selling at $8.50. Pocahontas when obtainable retails around $10.50 to $11.

Steam trade is active as railroads are now good purchasers and most other industries are in the market. In the Michigan industrial centers fuel is scarce and many of the plants were compelled to close down. Prices soared as a result. Quotations of $5.75 for Kanawha slack were heard of in the local market.

The Lake trade is assuming more importance. Some cargoes have been moved to the upper Lake region, but embargoes have largely prevented shipments to the lower Lake ports. The tonnage moving to the docks is under the control of the producing companies.

Prices at the mines for the principal coals used in Ohio are:

Hocking, lump	$3.75@$4.25
Hocking, mine-run	3.50@ 4.00
Hocking, screenings	3.25@ 3.75
Pomeroy, lump	4.00@ 4.50
Pomeroy, mine-run	3.75@ 4.00
Pomeroy, screenings	3.50@ 4.00
W. Va. splints, lump	5.00@ 5.50
W. Va., mine-run	4.50@ 5.00
W. Va., screenings	4.50@ 5.00
Pocahontas, lump	8.00
Pocahontas, mine-run	7.50@ 7.75

CINCINNATI

Movement of Cars Increasing — Demand Is Strong for Both Industrial and Domestic Fuel — Much Coal Moving by River—General Outlook Encouraging and Prices Are Firm.

With strike conditions on the railroads being rectified somewhat, operators here see no reason why the coal situation in this district should not clear up in a similar manner. It is quite evident, they say, that more empties are going to the mines and consequently the production will be larger in the near future, and with embargoes in general removed, conditions should brighten up to a considerable extent.

Shipments into the Cincinnati district from West Virginia have increased in the past week and many industries that were low on their supplies were able to stock up a bit.

Prices for all kinds of fuel remain firm in the Cincinnati market. Everybody is buying coal. There are no coal users who are going to be found without their usual winter supply next November.

Dealers in Cincinnati state that never before has there been such a demand for coal from the householder. With no places to move to, even if they desired, there is nothing to do but order the winter coal and have it stowed away. That is exactly what the Cincinnati householders are doing.

Considerable coal is moving down the Ohio River. Except for this great waterway Cincinnati would have been in a pretty fix during the rail strike. There were many industries that were supplied with coal that came down the river which otherwise would have seriously felt the pinch.

Coal men in general are of the opinion that there should be only messages of optimisim going the rounds of the trade at this time and that whatever gloom may appear above the horizon should quickly be dispelled.

ST. LOUIS

Railroad Conditions Improving — Some Coal Coming in Train Loads — Mines Slowly Resuming Operations — Local Situation Fairly Good — Country Demand Strong.

The local situation is easing up gradually. The trunk roads have for the most part their full crews at work, but the terminal is tied up and coal is coming over in train loads pricipally to the main unloading points. The mines are working two to three days per week on most of the roads.

The local situation in steam coal is in fairly good shape. Conditions in the country west of the river are still bad, but a little coal is gradually getting through. In the Standard field prices are as high as $4 for lump, $3.75 for mine-run, and $3.25 for screenings. In the Mt. Olive field the conditions are about the same, with the exception that prices are about $3.25 for domestic sizes of $3.50, with practically no steam coal quoted. On the Missouri Pacific nearly all coal loaded is promptly taken by the railroad for company use, and this road is buying several hundred cars in the Standard field.

The fact that there is a contemplated merger of about 70 mines in the Standard field became public for the first time this week It involved between $9,000,000 and $10,000.000 and takes up about 50,000 to 70,000 tons per day of coal.

DETROIT

Though Little Coal Remains in the State, the Outlook for Moving Shipments Is Reported Brightening.

Bituminous—With the announcement that freight congestion is diminishing in Toledo and at other junction points, the outlook for moving coal into Detroit and Michigan is said to be improving. Under direction of the Michigan Public Utilities Commission, two traffic men have been dispatched to work on the problem, one in Columbus, the other in Cincinnati. They will try to get coal consigned to public utilities of the state, moving to its delivery point.

In many of the cities of the state, gas and electric companies have only three or four days' supply of coal and for some time to come, probably, will be dependent on receipts from day to day to continue in operation. The Ionia State hospital, which was without coal, has succeeded in getting a small supply. Shipments are reported on the way to Pontiac and Bay City, where public utilities are in urgent need of coal. The gas plant serving Plainwell, Otsego and Allegan, it was recently announced, would be obliged to close.

While the state is struggling with the problem of getting fuel, the coal mines in Michigan have closed. The miners are demanding that the new wage scale, which has been discussed for a month past, provide for the 10 cents a ton advance in wages, which they say should have been given them during the war.

MIDWEST REVIEW

There is little market news to report as there has been practically no change in the situation here during the past three or four weeks. Coal can be purchased, but in such small quantities that it cannot begin to take care of the demand, which continues quite strong. The big terminals are all embargoed and as a result operators and producers are routing coal to other points which can be reached without going through Chicago, Peoria, or East St. Louis.

Railroad authorities report that they are getting the situation well in hand, and that they are replacing the striking switchmen fast. The traffic congestion may be straightened out within the course of the next two weeks and from now on conditions may take a turn for the better.

The better grade of coals, as per May 1 announcement, is selling at ten cents over and above the April prices. In other words, southern Illinois coal which in April was selling at $3.40 per ton, is now $3.50. This ten cent per ton increase will continue monthly until October. As it is understood, no price has been decided upon beyond October.

This sliding scale of prices is quite popular with the retail trade, as it furnishes them an incentive to purchase their coal early, and at the same time gives them an idea as to operating costs for the spring and summer months. There is some coal sold at prices in excess of $3.50 for the prepared sizes, but paradoxically about all the coal that is moving at fancy prices is said to be off-grade stuff not readily sold on contract. The methods of those selling at exorbitant prices are frowned upon by the more responsible operators and by the public in general. Luckily these operators are decidedly in the minority.

South

LOUISVILLE

Demand Strong with Run-of-Mine Selling Better Than Block—Embargo Situation Bad — Heavy Movement South with Northern Demand Starting.

The demand for all grades of coal is strong, and increasing as steam stocks run low, and as byproduct and gas plants begin getting worried about supplies. Railroads are buying coal, and paying good prices. Retailers are meeting with a larger spring stocking demand than had been anticipated on the present high market, and are glad to accept lumpy run-of-mine, where block is not available.

Comparatively little block coal is being produced, as the operators will not take chances of screening coal, having cars held over night and losing them from the net day's allotment, which is not much better than two days a week at the most. Again mine-run is selling at as good or better prices than block coal.

The embargo situation is still bad, and the Cincinnati gateway is slower in opening than had been anticipated. This is resulting in larger movement South. Northern demand is starting, although shipments are quite light.

There is an especially heavy demand for gas and byproduct coals, such as Harlan No. 4, Hazard, Elkhorn and Straight Creek. There is hardly any such thing as a market on such coals, as they are all going at prices ranging from $4.50 to $6.25 a ton.

Byproduct coals are quoted from eastern and southeastern Kentucky with run-of-mine firm at $6@$6.25. Operators in many instances refusing to charge more than $4.50 for block, but much of this grade is selling at around $6. Nut and slack are scarce, the price ranges from $5.25 a ton upward at mine.

In the Hazard field block sells at around $5.50@$6 per ton; mine-run, $4.50@$5 and up to $6 a ton; nut and slack, $4.75@$5.25.

Western Kentucky prices are firm, with block selling at $3.25@$3.40; mine-run, $2.85@$3.10; nut and slack, $2.50@$2.60; and pea and slack, $2.25 @2.40.

BIRMINGHAM

Car Shortage More Acute the Past Week Curtails Production — Industrial Demand Heavy and Bunkerage Trade Active.

The car supply for this field the past week was somewhat below that for the previous period, the production of coal was hampered and deliveries to consumers were quite unsatisfactory. As there are practically no stocks in the hands of steam users any interference with daily receipts seriously menaces the business of the consumer.

There is a demand here for every grade of coal, much in excess of the tonnage to be had. Spot and contract inquiry is strong, and a great deal of the offering has to be turned down or accepted with limitations both as to tonnage and delivery. Much steam coal has been contracted through June 30, 1921, but there are a number of mines which have not yet made any contract agreements; most all operators making a reasonable tonnage reservation for the spot trade and to care for contingencies which may affect production.

There is a better demand for bunkerage coal than has existed heretofore, and the amount of this business taken on now is only limited by the supply which can reasonably be promised under present transportation conditions.

Inquiries for export coal to France and Italy have also been received in this district, a shipment having gone forward to the latter country recently.

Excessive rains which have continued through several weeks past have interrupted production at some mines by flooding the workings. Labor is delinquent, and there is also a shortage in the field as a whole, but shortage of equipment is the principal factor in holding production below the trade needs of the territory.

News From the Coal Fields

Northern Appalachian

FAIRMONT

Erratic Transportation in Northern Fields—Midwest, Lake and Other Markets Opening Up—Railroad Fuel Shipments Large.

The final week of April was a week of contrasts in northern West Virginia fields from a transportation standpoint, the supply of cars reaching the maximum and then dropping to the minimum production following. In the Fairmont region on the first day of the week there were 1,983 cars and all previous loading records were broken.

On Wednesday only 307 cars were furnished for all the mines on the Monongah division of the Baltimore & Ohio. Since a large number of the cars furnished were used for railroad fuel it will be seen that a comparatively small amount of commercial coal was loaded. After Wednesday between 500 and 600 cars a day were supplied.

Cars were somewhat more plentiful on the Monongahela R.R. than during the previous week but only for a day or so, as the Pittsburgh & Lake Erie was unable to move any freight from Brownsville, Pa., during the week, the Pennsylvania following suit. On the last day of the month there were about 2,000 cars of coal at Brownsville, Pa.

During the first few days of the week there was only a limited movement of coal to the Lakes owing to an embargo. Cincinnati for several days was the westernmost point to which much northern West Virginia coal could be shipped. It was possible to ship, during the last few days of April, to points on the Philadelphia & Reading. Staten Islands points were also opened.

By the middle of the week the Pennsylvania was forced to impose an embargo on coal shipments from northern West Virginia except under permit, railroad fuel and fuel for public utilities excepted. By Wednesday Pools 44, 11, 34 and 38 at Curtis Bay were under embargo again. By the end of the week no coal could be shipped to Curtis Bay, Locust Point and Baltimore coal piers, owing to an embargo, except under special permit.

Railroad shipments were rather large during the week, the railroads in fact securing the bulk of the coal. In some quarters it was said that the railroads had declared embargoes with a view to securing fuel.

There was produced at mines on the Monongah division of the Baltimore & Ohio during April 944,600 tons of coal, or 252,550 tons more than had been produced during April, 1919. Total production at mines supplied by the Monongahela R.R. during April reached 178,600 tons.

Use of assigned cars by railroads in northern West Virginia during the last fews days of April continued to provoke much discussion. Reports were also received of coal from northern West Virginia being confiscated.

PITTSBURGH

Car Supplies Continue to Improve—Operations Are Only About 40 Per Cent of Capacity—Lake Shipments Light.

Car supplies in the Pittsburgh district increased more in the past week than in the preceding one, but left quite an unsatisfactory situation nevertheless. Except for the solid-trainload and the river shipment, the movement of coal actually to consumers is extremely light. The condition as to line supplies is mitigated materially by there being scarcely any movement for the Lake trade, and it will require quite heavy shipping later on to make up the deficit, as Lake shipments are already a million tons behind schedule.

Taking the district as a whole, mining operations are now at about 40 per cent of rated capacity. Some consumers are getting practically a full supply while others get no coal at all. On account of decreased consumptive demand and the small Lake shipments, the supplies in general are probably equal to about 60 per cent of normal requirements.

The market continues rather quiet, with prices irregular on account of there being so much more difficulty in shipping to some points than to others. Generally speaking prices may be quoted the same as a week ago: Prompt, $4@4.50; contract, $3.50@4, per net ton at mine. Pittsburgh district.

CONNELLSVILLE

Car Supplies Irregular, with No General Improvement—Byproduct Ovens Doing Better—Connellsville Market Stiffens.

Last week opened with poorer car supplies in the Connellsville region than the previous period, but conditions improved later in the week, though hardly enough to permit any further gain in production. The solid-trainload movement is working quite well as to certain points, and the trainloads of empties generally get back in good time. The river movement has increased somewhat and is now of relatively large proportions.

The byproduct coke ovens are doing better; in the near-by Youngstown district, which was hardest hit by the rail strike, the operations are hardly much more than 50 per cent of normal. The operations have no stocks to draw upon, and their supplies are coming only by trainload movements, naturally somewhat irregular.

The Connellsville market for spot coke, both furnace and foundry, has stiffened about a dollar a ton, this being due to the larger number of consumers to whom shipments can be made, rather than to any decrease in the offerings. The spot market is now quotable at $12 for furnace coke and $13 for foundry coke, per net ton at ovens.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919a Week	1919a Calendar Year to Date
April, 17b	7,563,000	157,730,000	7,411,000	126,141,000
Daily average	1,261,000	1,709,000	1,235,000	1,367,000
April, 24b	8,485,000	166,215,000	7,378,000	133,519,000
Daily average	1,414,000	1,691,000	1,223,000	1,358,000
May 1c	8,898,000	175,114,000	8,022,000	141,541,000
Daily average	1,483,000	1,679,000	1,337,000	1,357,000

a Less one day's production during New Year's week to equalize number of days covered for the two years. *b* Revised from last report. *c* Subject to revision.

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919a Week	1919a Calendar Year to Date
April, 17b	1,215,000	24,321,000	1,603,000	21,966,000
April, 24b	1,618,000	25,939,000	1,435,000	23,401,000
May 1c	1,792,000	27,731,000	1,717,000	25,118,000

a Less one day's production during New Year's week to equalize number of days covered for the two years. *b* Revised from last report. *c* Subject to revision.

BEEHIVE COKE

Week Ended May 1c 1920	Week Ended Apr. 24b 1920	Week Ended May 3 1919	1920 to date	1919a to date
373,000	342,000	295,000	7,388,000	7,403,000

a Less than one day's production during New Year's week to equalize number of days covered for the two years. *b* Revised from last report. *c* Subject to revision.

(All figures in net tons.)

Middle Appalachian

POCAHONTAS AND TUG RIVER

Output Curtailed in Last Week of April—Most Coal Goes East—Mines Work One to Two Days a Week.

The final week of April witnessed a more serious curtailment of production in fields supplied by the Norfolk & Western than at any time during the month, the full effects of the strike not being evident until a semblance of order had been restored on western lines. While men had returned to work at Kenova and Ironton on April 29, and while the weighing of coal at Portsmouth had become possible, it was still difficult to handle coal to western points on the Norfolk & Western.

Coal produced was moved to eastern points during the strike. Coal forwarded to points west of Williamson was shipped in solid trains so as to avoid switching in moving such coal through western terminals. Such solid train loads of coal moved were consigned to large consumers in Indiana and elsewhere.

The supply of cars from western sources was negligible. Virtually all the product of the Thacker, Pocahontas and Tug River mines was being sent eastward. Cars were not being returned promptly owing to the large amount of coal on hand at tidewater.

No coal was being shipped to the Lakes from Norfolk & Western originating points. Even tidewater was embargoed in certain instances, pools 41, 42 and 43 being affected in that respect. Thus Inland East markets afforded the only outlet.

Cars were so scarce that few mines were able to operate more than one or two days during the week. The bulk of Pocahontas production was flowing to tidewater. However the lower grades of coal from the Pocahontas field were embargoed to some extent. Lake ports were still closed to Pocahontas mines, so that virtually no coal has been shipped to Lake points from the Pocahontas field during the present season.

Transportation conditions were worse in the Tug River field during the final week of April than ever before. Cars were so scarce that mines were able to work only from one to two days during the entire week.

Only solid train loads were shipped to western markets, the great bulk of Tug River coal moving to tidewater terminals. It was impossible to ship any coal to the Lakes owing to conditions at Columbus, Portsmouth and other weighing points. During the latter part of the week conditions were more nearly normal.

NEW RIVER

Cars Scarce in New River—Shipments at Low Ebb East and West—Gulf Mines on Virginian Ry. Able to Work.

A shortage of cars continued to interfere with production in the New River field during the last weekly working period in April. While the backbone of the yardmen's and switchmen's strike may have been broken, that brought no relief to mines in the New River section of West Virginia. Instead conditions had undergone a change for the worse, cars being much more scarce than during the strike. The maximum car supply for the week was little more than 50 per cent.

One reason for the pronounced shortage lay in the fact that extremely few cars were being received from Western connections, and that so much coal was still under load at tidewater; there was only a comparatively small number of empties in the shuttle movement between tidewater and the mines. Western shipments of coal and coke from the New River field were at low ebb, although embargoes had been removed on a number of western points.

Winding Gulf mines able to ship over the Virginian Ry. during the week ended May 1 enjoyed somewhat of an advantage over mines in other fields, owing to the more liberal car supply on the road mentioned; mines on that road being able to work about four days out of the six.

While Virginian mines fared better than mines in other regions, that was not true as to mines dependent upon the Chesapeake & Ohio, since that road furnished only enough cars to keep its mines going for about two and a half days out of the six. There was a very strong demand at tidewater for Winding Gulf coal.

KANAWHA

Poor Car Supply Limits Production—Kanawha Coal Goes to Tide—Limited Western and Lake Shipments.

Less coal was produced in the Kanawha field during the final week of April than at any time during the month, owing to the poor car supply. With cars so scarce it was not possible for Kanawha mines to work more than three full days out of the six. The only part of the Kanawha field in which there was any improvement in fact was that supplied by the Kanawha & Michigan R.R. The mines on this road had virtually a full supply throughout the week.

By far the largest part of the high volatile production of the Kanawha field was going to tidewater. Western and Lake shipments were still quite materially limited, despite the fact that embargoes had been removed as to Russell shipments and shipments to points west of Russell. Cars could be obtained from the East alone, and as much coal was still held in cars there, the supply of empties was necessarily limited.

LOGAN

Guyan Output Increases but Car Shortages Cause Frequent Shutdowns—Embargoes on High Volatile to Tide Lifted.

Production was increased in the Guyan field during the last week of April to the extent of about 37,000 tons as compared with that of the week ended April 24; mines had approximately 750 more cars than during the previous week although the field got away to quite a poor start. Total production for the week ended May 1 was about 155,000 tons as against only 117,000 tons for the previous week.

Production was far below normal, car-shortage losses still running well over 225,000 tons, necessitating frequent shutdowns. As mines of the field were mainly dependent upon the East for a car supply, they were forced to wait until cars could be unloaded at tidewater; comparatively few cars were being received from the West, at least during the early part of the weekly working period.

While there had been an increase in production in the Logan field, such an increase was not general insofar as the mines on the Chesapeake & Ohio system as a whole were concerned. There were decreases in every district except in the Guyan and at the mines on the Sandy Valley & Elkhorn and the Long Fork; only 8,409 cars or 420,450 tons being transported, as against 9,149 cars or 457,450 tons during the previous week.

NORTHEASTERN KENTUCKY

Output One-third Normal—Conditions Slowly Improving—Contracts Filled at Prices Much Below Market.

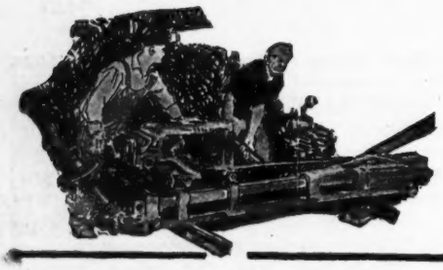
Production in the northeast Kentucky field underwent a slight increase in the final week of April, advancing from 90,000 tons to 100,000 tons, or from 33 to 37 per cent, still leaving, however, a total production loss of 63 per cent and a car-shortage loss of 167,120 tons. The increase was due to an improvement in conditions on the Louisville & Nashville R.R.

Transportation conditions on the Chesapeake & Ohio were just about the same as they had been during the preceding week, with mines working about 38 per cent of full time; mines on the Louisville & Nashville being able to work about two days out of the six.

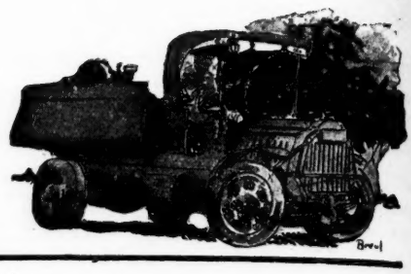
At Russell conditions were improving from day to day and operations in the yard there were just about 50 per cent of normal. However, an arrangement whereby solid trains of coal could be shipped was all that prevented the strike and its after-effects from closing more mines.

The April output of coal in the northeast Kentucky field fell about 150,000 tons behind that for March, due to the strike. The car supply for May might reach about 60 per cent of normal unless something (now unforeseen) occurs to impair transportation facilities.

High prices were being offered for coal in the northeast Kentucky field during the last week of the month, but operators generally declined to part with their coal at such high prices, continuing to supply customers (holding contracts) at prices much below current market quotations. This condition will prevail for some time.



Mine and Company News



ILLINOIS

Springfield—Several mining men of Illinois who have been suggested to fill the vacancy of Joseph C. Thompson, the late State Director of Department of Mines and Minerals of Illinois, are: Robert Medill and William Hutton, both of Duquoin; James Taylor, of Peoria, and Martin Bolt, of Springfield. William Hutton is a member of the Illinois Miners' Executive Board, the Illinois State Mining Board and has the indorsement of many prominent mining leaders throughout the state, incldng Frank Farrington, president of the Illinois Miners' Organization. Robert Medill was for several years with the Deering interests in Southern Illinois, also the O'Gara Coal & Mining Co.; at the present time he is general superintendent for the Union Colliery Co., of St. Louis, at its large Kathleen mine at Dowell, Ill. James Taylor, now of Peoria, was formerly State Mine Inspector of Illinois, and has held other prominent positions throughout the state. Martin Bolt has been Assistant Director of Mines and Minerals for several years, having served under Evan D. John who died three years ago.

Illinois is a great mining state, crowding West Virginia for second place among this country's bituminous coal producers.

INDIANA

Terre Haute—The Vermilion Coal Co., of Clinton, Ind., has filed a deed conveying to it from Aaron Koonce, the coal rights of 130 acres of land in Fayette Township for a consideration of $24,000. The deed conveys to the coal company outright sufficient land for the erection of tipples and switches for the operation of any mines which may be sunk. The Vermilion company has just acquired from the United States Steel Corporation the coal rights to 1,700 acres of land in Fayette Township, near Shirkieville, and material is now being delivered on the ground for the opening of a new mine. The company owns and operates another mine in the Clinton field. A. H. Spears, of the Ferguson-Spears Coal Co., which operates the Submarine mine, near Tecumseh, is at the head of the company, and other capitalists of Clinton are principally interested.

Petersburg—The Oliphant-Johnson Coal Co., after making a number of tests east of this city, has transferred its drilling rigs across White River, in Knox County, where several thousand acres of coal land are being drilled. During the last few weeks, 10,000 acres of coal land in southern Pike County have been leased by coal companies. West of this city half a dozen different coal companies are leasing coal land. The Pike County Coal Co. paid $15,000 to David Grubb for coal on his farm.

KENTUCKY

Middlesboro—The Low Ash Mining Co. has increased its capitalization from $10,000 to $100,000, to provide for general business expansion.

MARYLAND

Cumberland—The Manor Coal Co., of this place has been incorporated with a capital of $300,000 to engage in general coal-mining operations. Edward J. Ryan, Albert A. Doub, and John L. Wellington, are the incorporators.

OHIO

Columbus—The Southern Ohio Coal Exchange planned to meet on May 11 to consider the law pending in Congress providing for the appointment of a fuel commissioner to investigate every phase of the coal industry and report his findings to Congress. On the face of the bill it appears like a good move and may receive the support of the association. Another question to be considered at the meeting is that of the assignment of cars at mines where fuel is furnished to railroads. The exchange believes that the distribution of cars should be carried out without favor to mines supplying railroad fuel.

OKLAHOMA

Henryetta, Okla.—The Wise-Buchanan Coal Co. has been organized at this place, and charter filed with the Secretary of State at Oklahoma City. The company is capitalized at $400,000, and it will do a general mining and coal distributing business. The incorporators are: H. E. Wise, of Henryetta; D. C. Wise and L. P. Buchanan, of Joplin, Mo.

PENNSYLVANIA

Scranton—The report of the Delaware & Hudson Co. for the year ended Dec. 31, 1919, shows that the Coal Department of the company produced during the year (including the product of washeries) 8,205,495 long tons, a decrease of 853,733 tons, or 9.42 per cent below 1918. The year's output was 12.27 per cent of the total output of Pennsylvania mines and washeries (or 66,855,311 long tons) or 12.78 per cent below 1918. The decrease in production, says the report, compared with 1918, was almost entirely in the output of the washeries. Demand for steam sizes was much below 1918 and, as these sizes make up nearly all the coal recovered from the culm banks and prepared in the washeries, their operation was necessarily less constant and extensive than the previous year.

Wilkes-Barre—E. R. Pettebone and J. M. Humphrey, mining engineers on the Mine Inspectors' Examining Board, have withdrawn from the sessions, objecting to the decision of the miners' representatives of the board, who refused to reveal to them the question which they (the miners' representatives) would present to the candidates. The miners' appointees were willing to let the engineers submit questions without revealing them to the board, but demanded secrecy for their own inquiries. The validity of the examinations may be affected by the engineers' withdrawal.

WEST VIRGINIA

Fairmont—The Delmar Coal Co., of this city, headed by John T. Phillips, has tripled its capital. The capitalization was originally $300,000. It has been increased to $1,000,000. Another company whose capital has just been increased is the Ashford Coal & Coke Co., of Charleston, the increase being from $25,000 to $50,000.

Huntington—All coal-producing districts on the Chesapeake & Ohio R.R. were represented at a meeting held in this city recently. Operators of the various fields, including the Kanawha, Coal River, New River, Winding Gulf, Logan and Big Sandy, met to discuss the car shortage, which has become so pronounced as to seriously curtail production in all fields. Steps were taken for co-ordinated action in seeking to overcome the serious transportation handicap. While the matter has been vigorously presented to officials of the Chesapeake & Ohio since the first of the year, nothing tangible has so far been done toward relieving shortage.

Welch—The Iaeger estate in southern West Virginia will be incorporated as the Iaeger Foundation, and in connection with such a plan it is also proposed to sub-divide the Iaeger holdings of 25,000 acres into smaller parcels of land in order to encourage development of the property. The land will be leased on favorable terms so that men who have been employees will be in a position to become operators.

Charleston—If the Public Service Commission of West Virginia grants the 42 per cent increase in rates for power, applied for by the Kentucky & West Virginia Power Co., it will be over the protest of the operators of the Logan field. A delegation of 15 operators, headed by J. J. Ross, president of the Logan Operators' Association, recently attended the public hearing on the power company's application. In opposing the proposed increase in rates, the Logan operators also voiced their opposition to the proposed new form of contract.

Prominent Charleston capitalists have organized companies to operate in the smokeless field of Fayette County. One of the companies is the Old Colony Smokeless Coal Co., which is capitalized at $100,000. The other new company is the Nay Aug Smokeless Fuel Co., which will also operate in Fayette County, this company having a capital of $150,000. Those responsible for the organization of both companies were: J. A. Thayer, T. C. Beury, A. S. Guthrie, E. H. McNeil and John W. Fry, all of Charleston.

It is stated that the Winding Gulf Colliery Co., of Charleston, W. Va., is making improvements and extensions at its local operations, for increased capacity. At the present time the company is developing approximately 3,000 acres, with a daily capacity of about 2,000 tons. This company has recently increased its capital stock from $500,000 to $1,000,000, for proposed expansion. L. Epperly is local manager.

It is said the following West Virginia companies have increased their capital stock: The Morgantown Coal Co., of Morgantown, of which G. B. Hartley is president, from $25,000 to $100,000; and the Lewiston Block Coal Co., from $100,000 to $150,000.

It is recorded that 17 new resident coal corporations were formed in West Virginia in March, in addition to one non-resident corporation. The combined capital of these companies was $3,350,000. The larger of these new companies were: Guyan Collieries Corporation, Beckley, $2,000,000; McCall Coal Co., Logan, $200,000; Peacock Coal Co., Clarksburg, $150,000; Forest Coal Co., Fairmont, $200,000; Shamrock Fuel Co., Morgantown, $125,000; Glendale Gas Coal Co., of Cleveland, non-resident, $100,000.

Last week three coal-handling companies were organized by E. L. Bailey, of Williamson, and E. H. Sudduth, of Welch. The new companies are the Bailey Fuel Co., of Charleston, capitalized at $100,000; the Sudduth Fuel Co., capitalized at $100,000; the Williamson Fuel Co., of Charleston, capitalized at $100,000. The output of companies in Pike County, Ky., and in Mingo County, W. Va., will be handled by these three companies.

Queen Shoals—Organization of the Rex Colliery Co., with a capitalization of $150,000, presages extensive development on the part of that company in Clay and Kanawha counties on the line of the Coal & Coke division of the Baltimore & Ohio R.R. Among those active in the launching of the new company were: C. H. Hoyt, of Toledo, Ohio; J. B. Ramage, of Queen Shoals; W. T. Lively, F. M. Stambaugh and I. S. Adams, of Charleston, W. Va.

ALBERTA, CANADA

Edmonton—The Red Deer Valley Coal Operators' Association, including all the mines in the Drumheller field, has decided upon a summer discount on the price of coal, in order to induce dealers and consumers to put in a stock during the spring and summer. On shipments made during April, a discount of 5 per cent was allowed, and for the subsequent months a sliding scale has been adopted—4 per cent for May, 3 per cent for June and 2 per cent for July. The good effect has already been noticeable and large orders are being received, mostly from Manitoba.

Association Activities

Texas Coal Dealers' Association

The Texas Retail Coal Dealers' Association held its annual convention at McAlester, Okla., the meeting being held outside the state at the invitation of the McAlester Fuel Co., which operates large coal mines near here. An opportunity thus was given to those attending the convention to inspect the mines from which comes some of the coal burned in Texas.

The convention lasted two days, at the close of which officers were elected as follows: C. H. Lilley, Fort Worth, president; W. C. Kenyon, Amarillo, vice president; W. D. Lacy, Jr., Waco, second vice president; C. R. Goldman, Dallas, secretary and treasurer.

For the next convention, Dallas, Galveston, Fort Worth and Trinidad, Col., were bidders, and it was voted to decide the next meeting place by postcard vote of the entire membership.

More than 350 Texas retail coal dealers as well as many dealers from Oklahoma attended the convention, and at the close of the two-day meeting the coal men visited the workings of the McAlester Fuel Co.'s mines.

The keynote of the meeting was the necessity for early purchase of coal by the public for next winter's use. The secretary was instructed to write urgent letters to all members of the association, stressing the importance of conducting campaigns in their respective localities, urging the public to buy coal now for next winter's use. Liberal use of advertising was urged in furtherance of this campaign.

The convention in many respects was regarded as unusual. At the banquet on the first night there were present among others the following notables; John P. White, former international president of the United Mine Workers of America; John H. Wilkinson, president of the Mine Workers of Oklahoma; J. G. Puterbaugh, head of the McAlester Fuel Co., one of the largest wholesale coal distributors in Oklahoma; Ellery B. Gordon, secretary-manager of the National Retail Coal Dealers' Association, Philadelphia, Pa. T. Percy Ryan, executive committeeman of the National Retail Coal Dealers' Association, Kansas City, Mo.

Raleigh & Wyoming Institute

Finishing touches were put on the organization of the Raleigh & Wyoming Mining Institute, when a large number of mine executives assembled here recently. The institute elected as its first officers, John F. Absalom, as president and J. H. McLaughlin, secretary and treasurer. The meeting was called by V. E. Sullivan, one of the district inspectors, who presided over its deliberations. Talks were made by Messrs. Lilly and Stockdale (district inspectors), a Mr. Craven and by the Chief of the Department of Mines, R. M. Lambie. The Mine Chief emphasized the fact that the mining institutes of the state were not being formed as organizations to increase the pay of members, but to help members to so increase their usefulness that they would become invaluable to their companies.

Glen White Mining Institute

E. E. White, worthy president of the E. E. White Coal Co. was the principal speaker at the recent monthly meeting of the Glen White Mining Institute. Mr. White gave a plain old-fashioned heart-to-heart talk to the members of the institute. He said it was not how much in wages a man received under present conditions, but how far his wages went and how much he was able to save. The recent war, Mr. White said, among other things, had taught the people of the country how to save, yet he found a disposition on the part of many to forget that lesson and to sell their war investments below par. He pointed out that there are many forms of investment at satisfactory rates of interest, and tendered his personal service in aiding employees to make safe and judicious investments.

West Virginia Coal Association

A meeting of the executive committee of the West Virginia Coal Association was held in conjunction with representatives of various district associations of the state at Washington recently. The meeting was called especially to consider the car shortage, and it was decided to let the operators on a particular road handle the matter instead of attempting to deal with it as an association. The seasonal freight-rate bill was also under discussion. The general expression among the members was that the Frelinghuysen bills, now pending in Congress and which propose Federal control over the coal industry, are not necessary. The present source of trouble is the transportation situation alone.

Recent Patents

Apparatus for the Recuperation of Waste Fuel. Frank Lioud, St. Etienne, France, assignor to La Societe Le Coke Industriel (Societe Anonyme), St. Etienne, France, a company of France, 1,334,765. March 23, 1920. Filed Nov. 15, 1919. Serial No. 338,358.

Apparatus for and Method of Mining. Lewis H. Eichelberger, Plainfield, N. J., and Raymond A. Walter, Frostburg, Md., assignors to Ransome Concrete Machinery Co., New York N. Y., a corporation of New York, 1,334,894. March 23, 1920. Filed Oct. 27, 1916. Serial No. 128,049.

Dumping Hopper. Albert P. Lee, Chicago, Ill., assignor to Lee Loader & Body Co., Chicago, Ill., 1,334,913. March 23, 1920. Filed Oct. 31, 1918. Serial No. 260,741.

Fuse. Alfred L. Eustice, Chicago, Ill., 1,335,229. March 30, 1920. Filed May 4, 1918. Serial No. 232,484.

Mine Door. Charles H. Payne, Soddy, Tenn., assignor of one-third to John J. Clift, Soddy, Tenn., 1,335,255. March 30, 1920. Filed Oct. 11, 1919. Serial No. 329,902.

Pipe Wrench. Charles G. Martindale, Scotia, Cal., 1,335,252. March 30, 1920. Filed Jan. 15, 1919. Serial No. 271,245.

Coal-Handling Plant. Hohson S. Shimizu, Chicago, Ill., assignor to the Roberts & Schaefer Co., Chicago, Ill., 1,335,531. March 30, 1920. Filed May 18, 1918. Serial No. 235,234.

Rotary Pump. George Handley, Palmers Green, Eng., assignor of one-half to Percey Williams Bullock, London, Eng., 1,335,577. March 30, 1920. Filed Oct. 24, 1919. Serial No. 333,023.

Pump Jack. Arthur S. D. French, Bixby, Okla., 1,335,960. April 6, 1920. Filed June 3, 1919. Serial No. 301,394

Coal-Mining Machine. George McCarter, Denver, Col, 1,336,039. April 6, 1920. Filed Dec. 2, 1918. Serial No. 265,027.

Apparatus for Treating Fuel. Wilson L. McLaughlin, Decatur, Ill., 1,336,364. April 6, 1920. Filed Sept. 25, 1918. Serial No. 255,618

[U. S. patent specifications may be obtained from the Patent Office, Washington, D. C., at 10c. each.]

Trade Catalogs

Quick Concrete Mixing. The Standard Scale & Supply Co., Pittsburgh, Pa. Catalog Y 190. Pp. 24.; 8½ x 11 in.; illustrated. Description of machines and apparatus made by the Standard company.

The Way to Increased Production. Du Pont Chemical Co., Inc., Wilmington, Del. Booklet. Pp. 15; 3¼ x 6½ in.; not illustrated. Facts in regard to the company's sale of war surplus material.

Blawforms for Roads and Streets. Blaw-Knox Co., Pittsburgh, Pa. Catalog 9. Description of steel forms used in the construction of roads, curbs, gutters and pavements. Pp. 44; 6 x 9 in.; well illustrated.

Electric Hoists, Chain Blocks, Cranes and Trolleys. The Franklin Moore Co., Winsted, Conn. Catalog. Pp. 8; 3½ x 6 in.; illustrated. Descriptive, with price list.

Pneumatic Conveying Dust and Fume Recovery. The Dust Recovering & Conveying Co., Cleveland, Ohio. Bulletin 1. Pp. 34; 8½ x 11½ in.; illustrated. Description of special apparatus and its application to industry.

Short Course in Coal Mining. College of Engineering, West Virginia University, Morgantown, W. Va. Folder. Pp. 8; 6 x 9 in.; illustrated. Announcement of course to be given from June 21 to July 31; unfolding to one sheet for wall display.

Sullivan Drill Steel Furnace. The Sullivan Machinery Co., Chicago, Ill. Bulletin 74. Pp. 12; 6 x 9 in.; illustrated. Description of furnace or forge, operated by fuel oil or gas for the heating of rock-drill and hammer-drill steel.

Diagonal Deck Concentrating Tables. The Deister Concentrator Co., Fort Wayne, Ind. Bulletin 5. Pp. 23; 9 x 6 in.; illustrated. Description of the Deister-Overstrom type of table, calling attention to changes and improvements made.

American Trolley Carrier. The American Steam Conveyor Corporation, Chicago, Ill. Bulletin. Pp. 24; 7¾ x 10¾ in.; illustrated. Description of a one-man mechanical method of handling coal ashes, etc.

Multiwhirl Cooler. The Griscom-Russell Co., 90 West St., New York, N. Y. Bulletin 902. Pp. 11; 6 x 9 in.; illustrated. Description of device for cooling lubricating and quenching oils in the heat treatment of steel.

Industrial News

New York, N. Y.—The Hyatt Roller Bearing Co. announces the removal of the office of its Industrial Bearing division to a new building at 100 W. 41st St., New York City, where larger quarters have been secured for the advertising, sales and engineering departments of the division. D. Gleisen is the manager of the division.

East Pittsburgh, Pa.—The Westinghouse Electric & Manufacturing Co. has appointed **A. E. Hitchner** assistant to the manager, of the Industrial Department, in charge of mining and chemical industries. In 1906 Mr. Hitchner became engaged in the installation of coal-handling machinery for the Link-Belt Co. In 1912 he was appointed manager of the Wilkes-Barre suboffice of the Westinghouse company.

Personals

Among the changes in the personnel of the plant management of some of the Solvay collieries in the northeastern coal fields of Kentucky are the following: **C. A. Warden,** who has been general superintendent over the Coaldale, Henry Clay, Big Branch and Lookout mines, in Pike County, for the past four years, goes to Huntington to assume the duties of assistant to A. B. Rawn, general manager of the Solvay Collieries Co. **Thomas DeVenny** succeeds Mr. Warden as general superintendent of the Edgewater properties. Mr. DeVenny has been superintendent of the Freeburn plant of The Portsmouth-Solvay Coke Co. for nearly four years, dating back to the time when that property was acquired from The Turkey Gap Coal & Coke Co. The normal production at that time was about 100,000 tons per annum. During Mr. DeVenny's superintendency, much development work took place including several mine openings, an additional tipple, the erection of a modern machine shop, a second company store, more than 100 additional dwellings, and the institution of various amusement and community service buildings. The normal production of coal now approximates 400,000 tons a year. Mr. DeVenny is widely known in the Tug River mining circles. **E. L. Bailey,** another well known mining man of the Williamson field, who has been superintendent of the Solvay operation at Tolland, on Pond Creek, since the installation of that plant, has taken the position as superintendent at Freeburn. Mr. Bailey made a record in the physical development of the Tolland plant and in the production of coal. The new superintendent at Tolland is **E. W. Price,** formerly with the Burnwell Coal Co. at Sprigg, W. Va.

John Jeremiah Jr., has been appointed general superintendent over the six mines of the Willisville Coal & Mining Co., in Perry County, Ill., succeeding his uncle Thomas Jeremiah, who recently died. Mr. Jeremiah had been superintendent of one of the company's mines at Willisville for several years.

James Rollo has resigned his position with the American Railway and Mine Supply Co. of Chicago to accept one representing the Egyptian Powder Co., with headquarters in Marion, Ill.

E. P. Moritz, vice president in charge of sales of the Combustion Engineering Corporation, has resigned and expects to retire from active business indefinitely on account of poor health. He had been ill for some time previous to his resignation. No successor to Mr. Moritz has been named by the company, which has offices at 11 Broadway, New York, N. Y.

F. A. Fitzgerald, formerly with the Sangamon County Mining Co., has been appointed manager of the Illinois and Indiana coal mines of W. H. Harris, Inc., of Chicago.

Edwin Ludlow has been elected president of the Alumni Association of the School of Mines, Engineering and Chemistry, of Columbia University, New York City. Other officers elected were: Alonzo B. Bradley, vice president; George C. Stone, secretary; John Sheafe Douglas, treasurer; and S. A. Goldschmidt, Henry C. Pelton, William W. Lightpipe and George E. Strehan, managers.

Arthur F. Martin, formerly with the West Virginia Coal & Coke Co. as auditor, is now auditor of the Boone County Coal Corporation, with headquarters at Sharples, W. Va. Mr. Martin has been connected with the Davis Colliery Co. and its successor the West Virginia Coal & Coke Co. for a period of 12 years prior to Jan. 1, 1920, when he became the sales manager for the Green Coal Co., operating at Adrian and Strader, W. Va.

J. H. Lewis is the new Western district manager of the West Virginia Coal Co., a large exporting concern with headquarters at Richmond, Va. Mr. Lewis will establish his headquarters at Huntington, W. Va. For a time he represented the Eastern Coal and Export Co. in West Virginia.

E. F. Wilson, formerly chief chemist for the Westmoreland Coal Co., stationed at Irwin, Pa., has opened a commercial testing laboratory and consulting office at 222 South Third St., Philadelphia, Pa., where he will engage in private practice, specializing in fuels, industrial waters, and so on.

H. E. Brockman, chief clerk for the Taylor Coal Co., at Herrin, Ill., recently resigned to accept a position as cashier for the Carney-Cherokee Coal Co., at Mulberry, Kan.

George Hudson, formerly mining engineer of the Old Ben Coal Corporation, at its West Frankfort, Ill., mines, has accepted a position with the Saline County Coal Co., at mine No. 6, Herrin, Ill.

Coming Meetings

Mine Inspectors' Institute of America will hold its annual meeting May 13, 14 and 15 at Cleveland, Ohio. Secretary, J. W. Paul, Pittsburgh, Pa.

Pennsylvania Retail Coal Merchants Association will hold its annual meeting June 23, 24 and 25 at Reading, Pa. Secretary, W. M. Bertolet, Reading, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual meeting in Denver, Col., in conjunction with the National First Aid Meet on Aug. 20 and 21. Secretary, F. W. Whiteside, Denver, Col.

M. O. I. Coal Association will hold its annual convention June 16, 17 and 18 at Cedar Point, Ohio. Secretary, B. F. Nigh, Columbus, Ohio.

National Retail Coal Merchants' Association will hold its annual meeting June 10, White Sulphur Springs, W. Va. Secretary-manager, Ellery Gordon, Philadelphia, Pa.

Kentucky Mining Institute will hold its annual meeting June 4 and 5 at Lexington, Ky. Secretary, C. W. Strickland, Huntington, W. Va.

American Society of Mechanical Engineers will hold its spring meeting May 24, 25, 26 and 27 at St. Louis, Mo. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

West Virginia Coal Mining Institute will hold its annual meeting June 7 and 8, at White Sulphur Springs, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association will hold its annual meeting June 1 and 2 at Pittsburgh, Pa. Secretary, G. H. Merryweather, Washington, D. C.

The Colorado Retail Coal Dealers' Association will hold its annual meeting June 8, at Colorado Springs, Col. Secretary, E. Hopper, Denver, Col.

West Virginia Freeport Coal Operators' Association will hold its annual meeting June 3 at Kingwood, W. Va. Secretary, A. T. Carnahan, Akron, Ohio.

International Railway Fuel Association will hold its annual meeting May 24, 25, 26 and 27 at the Hotel Sherman, Chicago, Ill. Secretary, J. G. Crawford, Chicago, Ill.

American Institute of Electrical Engineers holds annual convention at White Sulphur Springs, W. Va., June 29 to July 2. Secretary, F. L. Hutchinson, New York, N. Y.

National Coal Association will hold its annual meeting May 25, 26 and 27 at the Traymore Hotel, Atlantic City, N. J. Secretary, W. B. Reed, Commercial Bank Building, Washington, D. C.